TCL
SERVICE MANUAL

21K9US-NX56E AP

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This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product

1、CAUTION:

Use of controls, adjustments or procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lighting flash with arrowhead symbol, with an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to the person.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:

Read all of these instructions. Save these instructions for later use. Follow all Warnings and Instructions marked on the audio equipment.

1. Read Instructions- All the safety and operating instructions should be read before the product is operated.
2. Retain Instructions- The safety and operating instructions should be retained for future reference.
3. Heed Warnings- All warnings on the product and in the operating instructions should be adhered to.
4. Follow Instructions- All operating and use instructions should be followed.

FOR YOUR PERSONAL SAFETY

1. When the power cord or plug is damaged or frayed, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
2. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
3. Do not allow anything to rest on or roll over the power cord, and do not place the TV where power cord is subject to traffic or abuse. This may result in a shock or fire hazard.
4. Do not attempt to service this television set yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
5. Never push objects of any kind into this television set through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the television set.
6. If the television set has been dropped or the cabinet has been damaged, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
7. If liquid has been spilled into the television set, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
8. Do not subject your television set to impact of any kind. Be particularly careful not to damage the picture tube surface.
9. Unplug this television set from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

10.1. Do not place this television set on an unstable cart, stand, or table. The television set may fall, causing serious injury to a child or an adult, and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer, or sold with the television set. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.

10.2. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

PROTECTION AND LOCATION OF YOUR SET

11. • Do not use this television set near water ... for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
    • Never expose the set to rain or water. If the set has been exposed to rain or water, unplug the set from the wall outlet and refer servicing to qualified service personnel.

12. Choose a place where light (artificial or sunlight) does not shine directly on the screen.

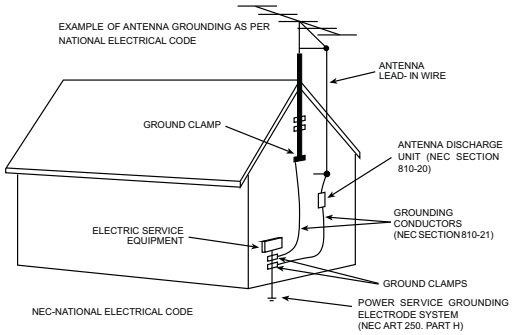
13. Avoid dusty places, since piling up of dust inside TV chassis may cause failure of the set when high humidity persists.

14. The set has slots, or openings in the cabinet for ventilation purposes, to provide reliable operation of the receiver, to protect it from overheating. These openings must not be blocked or covered.
    • Never cover the slots or openings with cloth or other material.
    • Never block the bottom ventilation slots of the set by placing it on a bed, sofa, rug, etc.
    • Never place the set near or over a radiator or heat register.
    • Never place the set in a "built-in" enclosure, unless proper ventilation is provided.

PROTECTION AND LOCATION OF YOUR SET

15.1. If an outside antenna is connected to the television set, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges, Section 810 of the National Electrical Code, NFPA No. 70-1975, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrode, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS


EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE
ANTENNA LEAD- IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
GROUNDING CONDUCTORS (NEC SECTION 810-21)
ELECTRIC SERVICE EQUIPMENT
GROUND CLAMPS
NEC-NATIONAL ELECTRICAL CODE
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250. PART H)

15.2. Note to CATV system installer : (Only for the television set with CATV reception)

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

16. An outside antenna system should not be located in the vicinity of overhead power lines or other electric lights or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.

17. For added protection for this television set during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage due to lightning and power-line surges.

OPERATION OF YOUR SET

18. This television set should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply at your home, consult your television dealer or local power company. For television sets designed to operate from battery power, refer to the operating instructions.
19. If the television set does not operate normally by following the operating instructions, unplug this television set from the wall outlet and refer servicing to qualified service personnel. Adjust only those controls that are covered in the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the television set to normal operation.
20. When going on a holiday : If your television set is to remain unused for a period of time, for instance, when you go on a holiday, turn the television set "off" and unplug the television set from the wall outlet.

IF THE SET DOES NOT OPERATE PROPERLY

21. If you are unable to restore normal operation by following the detailed procedure in your operating instructions, do not attempt any further adjustment. Unplug the set and call your dealer or service technician.
22. Whenever the television set is damaged or fails, or a distinct change in performance indicates a need for service, unplug the set and have it checked by a professional service technician.
23. It is normal for some TV sets to make occasional snapping or popping sounds, particularly when being turned on or off. If the snapping or popping is continuous or frequent, unplug the set and consult your dealer or service technician.

FOR SERVICE AND MODIFICATION

24. Do not use attachments not recommended by the television set manufacturer as they may cause hazards.
25. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
26. Upon completion of any service or repairs to the television set, ask the service technician to perform routine safety checks to determine that the television is in safe operating condition.

Product Functional Specification

Chassis Name	NX56	Serial No.	
Issued On	2008-1-18	Page	1 of 7
Updated On		Version	1.0

Disclosure

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- Version Information: Version states by two Arabic Numbers, which is separated by one dot, e.g. 1.2. The first number "1" means the version of approved file, the second one "2" means the version of draft.

Revision History

Model No.	Status		Date	Comment
29A41	Prepared by			V1.0 03-BA41UAE-TH32
	Checked by			
	Released by:			
	Revised by			
	Checked by			
	Released by:			
	Revised by			
	Checked by			
	Released by:			
	Revised by			
	Checked by			
	Released by:			

Model / Item	NX-56-AP 29A41		
Master Data			
-Version	1		
-Customer ID	EM		
-Destination	EM		
-Brand			
-BOM NO.	03-BA41UAE-TH32		
-Chassis			
Reception			
-Tuning [Channels Amt.]	255		
-Tuning [Technology]	PLL		
-Tuning [Indication]	Digital and Bar		
-Frequency Bands	Full Cable		
-IF Frequency	38.9MHz		
-TV Systems (Color+ Sound)	PAL SECAM BG DK I		
-AV Systems	NTSC PAL SECAM		
Picture-Processing			
-SCAN	Standard		
-Wide Screen Switching			
-Comb filter			
-Picture Enhancement			
LTI / CTI			
Black Stretch	X		
Dynamic Skin			
Others			
-Picture Control [General]			
Brightness	X		
Sharpness	X		
Contrast	X		
Tint	X		
Color	X		
-Picture Control [Special]			
Smart Pictures * modes	7 modes		
VM			
Color Temperature	3 modes		
Others			
-Picture Noise Reduction	X		
Picture – Display			
-CRT Type			
Normal Flat			
Pure Flat	X		
Super Flat			
-Deflection system			
1Fh	X		
2Fh			
-Tube Technology			
Iron			
AK	X		
Black Matrix			
Others			
-CRT Deflection (* Deg.)	110		
-CRT Magnetic Field			
-Screen Type	4:3		
-Screen Size / Vis. Size	29'		
Sound			
-Audio Power Consumption	5W+5W		
-Surround Sound			

Model / Item	NX-56-AP 29A41		
-Nicam			
-America Stereo (MTS,BTSC,MPS)			
-America SAP			
-Korea Stereo			
-Thai Bilingual	X		
-Super Woofer			
-AVL			
-Sound Control [General]			
Volume	X		
Mute	X		
-Sound Control [Special]			
Treble	X		
Bass	X		
Balance	X		
Equalizer			
Smart Sound * modes	7 modes		
Others			
-Speakers Quantity	2X1		
User Interface			
-Menu Language	English/Vietnam/Thai		
-Features [General]			
AT	X		
Biological Clock			
Calendar			
Clock			
Channel Swap	X		
Channel Naming			
Child Lock	X		
Favorite Channel	X		
Game			
Hotel Mode	X		
High Sensitive			
Notebook			
On/Off Timer	X		
Preset	X		
Recall	X		
Rotation			
Sleep	X		
AVC			
-Features [Special]			
V-chip / CCD			
Teletext *Pages			
Others			
New Features			
Smart signal	X		
Voltage display	X		
环境光检测			
Easy search	X		
Tuning Features			
-Auto Channel Program	X		
-Auto/Manual Tuning	X		
-Auto/Manual Store	X		
-Fine Tuning	X		
-Factory Mode	X		
-Service Mode			
Cabinet			
-Cabinet Name			

Model / Item	NX-56-AP 29A41		
-Front Cabinet Color			
-Middle Cabinet Color			
-Rear Cabinet Color			
-Local Controls Front			
Mains Switch	X		
CH+ CH- VOL+ VOL-	X		
TV/AV	X		
Menu	X		
Auto Search			
-Local Controls Top			
CH+ CH- VOL+ VOL-			
TV/AV			
Menu			
Auto Search			
-Indicator			
RC Received LED	X		
Standby LED	X		
Remote Controller			
-Type	RC166		
-Batteries			
Connectors Rear			
-SCART Full w/o Y/C			
-SCART Full with Y/C			
-SCART Single (CVBS)			
-Component In (YPbPr) Cinch for 50Hz			
-In Y/C+Cinch(CVBS+ Stereo)	1 + 2		
-In Y/C+Cinch (CVBS+ Mono)			
-In Cinch(CVBS+ Stereo)			
-In Cinch (CVBS+ Mono)			
-Out Cinch(CVBS+ Stereo)			
-Out Cinch(CVBS+ Mono)	1(follow TV)		
- Y,Cb,Cr input	X		
-Super Woofer			
-Digital Audio Out			
-Loudspeakers			
-Control Busses			
-Feature Slot			
-ITV Smart Port			
- Antenna in			
75 Ohms (IEC Type)	X		
Connectors Front/Side			
-In Y/C+Cinch(CVBS+ Stereo)			
-In Y/C+Cinch (CVBS+ Mono)			
-In Cinch(CVBS+ Stereo)			
-In Cinch (CVBS+ Mono)			
-Out Headphone			
Mini-Jack 3.5mm			
Final Equipment			
-Packing –Methods			
2 Color Printing			
Carton Color			
-Documents and Manuals			
Instruction Book			
Screen Sticker			
Plastic Bag			
Warranty Card			

Model / Item	NX-56-AP 29A41		
Guarantee Doc.			
Warning Label			
Approbation Label			
Others			
-Languages DFU			
-Indication on BACKOVER			
Made-in in family sheet			
FCC/Elect Shock Caution Label			
CE/Elect Shock Caution Label			
Warning Label			
Others			
Approbation	IEC65		
Miscellaneous			
-Mains Voltage	100-240V		
-Mains Frequency	50/60Hz		
-Type Mains Cord			
-Power Consumption TV in ON	75W		
-Power Consumption TV in Standby	<3W		

受控文件

NX56-AP&NX56B/C/E-AP Chassis Alignment Procedure

拟制: 陈国标　　日期: 2010-01-12

审核:　　日期:

批准:　　日期:

备注:（见蓝字体）　　1、修改有关勾边 RPA& RPO、亮度 CL、副亮度及色度如第 9、13、15、16、17 页码蓝字体部份。

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Revision History

Model No.	Status		Date	Comment
29A41/NX56	Prepared by	Luo MJ	2008-01-18	Ver0.1 03-BA41UAE-TH32（29A41/NX56）
	Checked by			
	Released by			
All NX56-AP chassis	Prepared by	Luo MJ	2008-01-18	Ver1.0 1. Updated the B+ specs accord with 21” tube. 2. Updated the description accord with the software changing.
	Checked by	Guo Guangyuan	2008-01-23	
	Released by	Zhou Songming	2008-01-23	
All NX56-AP chassis	Prepared by	Luo MJ	2008-07-04	Ver2.0 1. Updated the B+ specs accord with 25” tube. 2. Updated the description accord with the software changing.
	Checked by	Guo Guangyuan	2008-07-04	
	Released by	Zhou Songming	2008-07-04	
14F1 21NCM86 29E64S	Prepared by	GUO HQ	2009-02-09	Ver3.0
	Checked by			
	Released by	Zhou Songming	2009-02-09	
All NX56-AP& NX56B-AP chassis	Prepared by	Luo MJ	2009-04-24	Ver4.0 1. Updated the description accord with the software changing. 2. Updated the chassis name.
	Checked by			
	Released by			
All NX56-AP& NX56B/C/E-AP chassis	Prepared by	LI YUAN-KANG	2009-07-15	Ver5.0 1. Updated the description accord with the software changing. 2. Updated the chassis name.
	Checked by			
	Released by			
All NX56-AP& NX56B/C/E-AP chassis	Prepared by	Chen Guo Biao	2010-1-12	Ver6.0 1. Updated the description accord with the software changing. 2. Updated the chassis name.
	Checked by			
	Released by			

1.1. The way to enter P-Mode

a) Method one

A) Switch on the TV set.

B) Press the “MENU” key on RC to show the “PICTURE” OSD menu.

C) Move the cursor to “Contrast” item then press the “9”, “7”, “3”, “5” key continuously on RC within 3 seconds then enter P-Mode. The “P” letter will appear on the left low corner of the screen when enter P-Mode. Also the “FACTORY HOTKEY” will be set to “ON (= 1)”.

b) Another method

Press the “RECALL” key on RC to enter P-mode directly.

Note:

1. This will be active only when the “FACTORY HOTKEY” had set to “ON (= 1)”.

2. When the power on with “FACTORY HOTKEY” had set to “ON (= 1)”, the set will enter the P-Mode automatically.

1.2. Exit the P-Mode

Press the “RECALL” or “MENU” key on RC to exit the P-Mode.

1.3. Keys’ function on RC at the P-Mode

Use the RC to navigate in P-Mode:

Press **“0”** or **“AT”** key for screen voltage adjustment.

Press **“1” to “8”** and **“FAV”** key to select factory adjustment page.

Press **“9”** key to switch the I2C bus off/on.

Press **“▲▼”** or **“CH+ CH-”**key to select option.

Press **“►◄”** or **“VOL+ VOL-”** key to adjust or select option.

Press **“DISPLAY”** key to display software version.

Press **“MENU”** key to close the factory menu or return to the previous menu or exit the P-Mode.

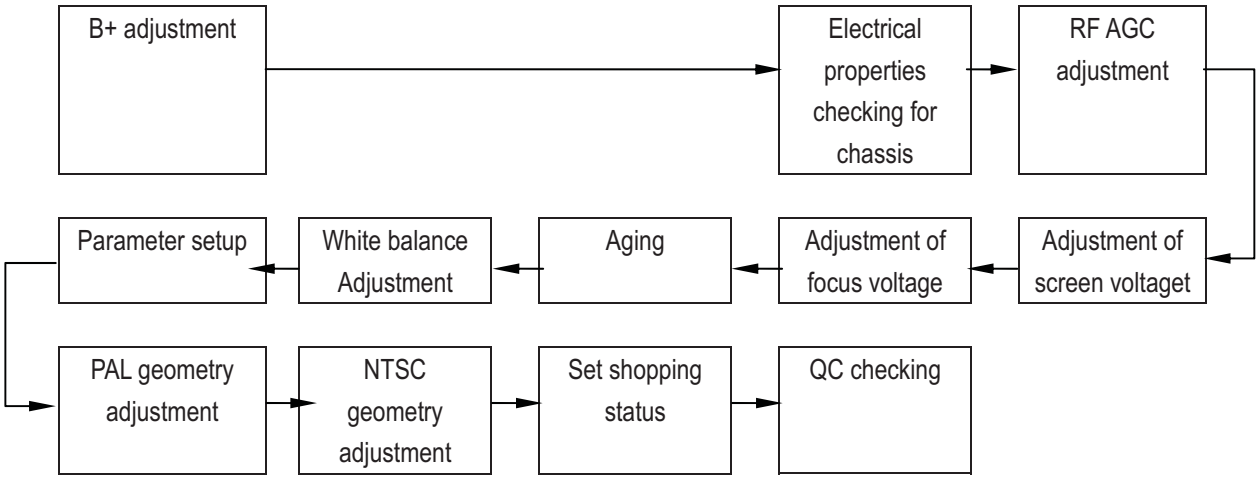
Press **“RECALL”** key to enter or exit the P-Mode.

Note: All change in P-Mode will be saved in EEPROM automatically.

1.4. The adjustment page list an RC key function on P-Mode:

RC key	Item	Description
0	Screen voltage adjustment	Adjust the VG2 voltage
1	Vertical geometry	Vertical geometry page
2	Horizontal geometry	Horizontal geometry page
3	White Balance Adjustment	White Balance page
4	Setup and option page select	Setup and option page 4
5		Setup and option page 5
6		Setup and option page 6
7		Setup and option page 7
8		Setup and option page 8
FAV		Setup and option page 9
9	I2C Bus OFF/ON	Press this key to enter or exit BUS OFF mode
DISPLAY	Software version	Display software version
MENU	Close menu or exit the P-Mode	Close the factory menu or return to the previous menu or exit the P-Mode
RECALL	P-Mode hotkey	Enter or exit the P-Mode
AT	Screen voltage adjustment with AKB	Adjust the VG2 voltage

2. Flowchart of alignment procedure



1) B+ Adjustment

2) RF AGC Adjustment

3) Screen & Focus adjustment

4) White balance adjustment

5) Producing parameter setup and option

6) Picture Geometry adjustment (Vertical first)

7) Set Shopping status

8) QC

3. Adjustment description

Note: Alignment should be done after 3 minutes warm up of TV.

3.1 B+ Voltages

1. All relevant connectors and modules must be connected and inserted.
2. Main voltage is at 220VAC, 50Hz.（voltage range:110VAC~240VAC,50Hz）
3. Connect a voltmeter to B+ (Cathode of D808 for NX56 chassis or cathode of D833 for NX56B chassis) and switch on the set.
4. Input Philips test pattern signal and standard mode.
5. Adjust VR801, it should as the value in below form B+ Voltage.

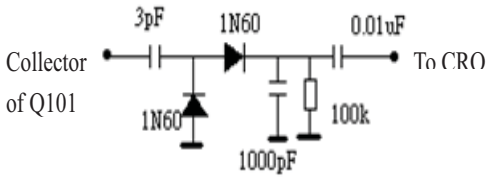
Table 3.1.1: The B+ value for vary tubes

CRT type (Part Number)	B+ Voltage
A68ERF185X013/M (44-29RFLN-HFCA)	125V+/-0.5V
A51ERF135X90 (44-21RFLW-HF2A)	105V+/-0.5V
A51ERS357X440(44-21RFLM-HF4A)	108V+/-0.5V
CRTA68AGA20X99（44-29OFLW-TS4A）	125V+/-0.5V
A59EEJ04X60（44-25OFLP-HF5A）	125V+/-0.5V
A59ERF181X03（44-25RFLN-HF1A）	125V+/-0.5V
A51CPAA01X04(44-21RFLN-IRBA/NX56C)	105V+/-1.0V
A51AEZ90X26(44-21OFLM-CH8A/NX56C)	105V+/-1.0V
37SX110Y22-DC05(44-14OFLN-IR6A/NX56C)	105V+/-1.0V

3.2 RF AGC alignment

3.2.1 Method 1

A. Connect the detector as shown below (Picture 3.2) to collector of Q101.
B. Receive a grey scale signal with 70dBμV amplitude.
C. Enter P-Mode, press “6” key on RC to select “AGCT”.
D. Adjust AGCT item until the output of the detector becomes 0.8Vpp



Picture 3.2

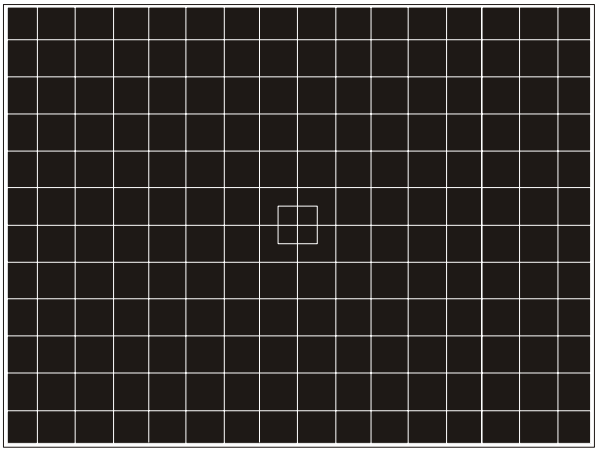
3.2.2 Method 2

A. Receive a grey scale signal with 60dBμV amplitude.
B. Enter P-Mode, press “6” key on RC to select “AGCT”.
C. Adjust the “AGCT” value until the hint display “AGC” just change between “0” and “1”.

3.3 Screen & Focus adjustment

Note: Alignment below should be done after 15 minutes warm up of TV.

1. Input cross hatch pattern signal to RF input.
2. Enter P-Mode.
2. Press “0” key on the RC and the screen will become a horizontal line.
3. Adjust the “SCREEN” VR of the FBT until the horizontal line can just be seen barely (minimum visible intensity).
4. Press “0” key again on the RC to exit the screen voltage adjustment mode.
5. Adjust the “FCOUS” VR of the FBT until the vertical line and horizontal line becomes clear, like picture 3.3.



Picture 3.3

3.4 White Balance Adjustment

1. Input a black and white pattern to RF input.
2. Enter P-Mode, press key “3” to select white balance adjustment menu.
3. Use the color analyzer to measure the black side of the screen. Adjust the value of “RC”,”GC” and “BC” to set the reading of the color analyzer to x=274, y=280. (11500 K).
4. Then measure the white side of the screen. Adjust the value of “RD”, “GD” and “BD” to set the reading of the color analyzer to x=274, y=280. (11500 K).
5. Repeat step 3&4 until you can get the correct reading for both black and white sides.

Note:

A. The “SubBRI” and “SubCON” items are used to assistant the white balance adjustment. It is the same function as the user OSD menu “Brightness” and “Contrast” items. You can adjust these items to get the expect intensity when adjusting the white balance.

B. The “BLOR-Y”, “BLOG-Y” and “BLOB-Y” items are used for the YUV white balance black level offset setup. When the TV white balance adjustment is done, connect a black and white pattern to YUV input terminal. Use the color analyzer to measure the black side of the screen. Adjust the value of the “BLOR-Y”, “BLOG-Y” and “BLOB-Y” to set the reading of the color analyzer to x=274, y=280.

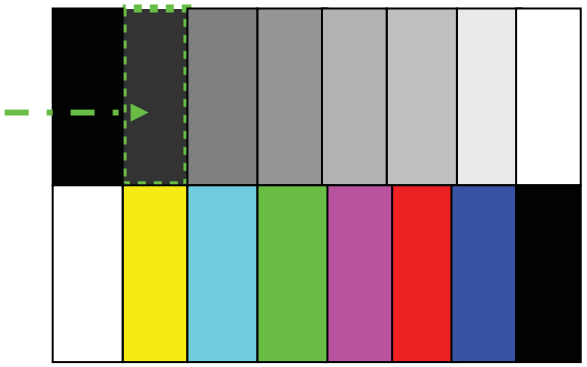
Table 3.4.1: The White Balance adjustment OSD menu

OSD menu	Default Value	Description	Remark
RC	32	R cut-off setting(BLOR)	Adjust to right value
GC	32	G cut-off setting(BLOG)	Adjust to right value
BC	32	B cut-off setting(BLOB)	Adjust to right value
RD	37	R drive setting(WPR)	Adjust to right value
GD	32	G drive setting(WPG)	Adjust to right value
BD	37	B drive setting(WPB)	Adjust to right value
BLOC	8	Black level offset course(BLOC)	Adjust to right value accord with the tube. Recommended value= “8”
PWL	8	Peak White Limiting	Adjust to right value accord with the tube. Recommended value= “8”
BriVSD	32	Brightness of horizontal line when adjust G2	Don’t adjust, use default value “32” for producing
SubBRI	32	Brightness	Same as user “Brightness” and “Contrast” adjust
SubCON	32	Contrast	
BLOR-Y	64	YUV white balance black level offset.	Adjust to right value accord with the difference tube and lot
BLOG-Y	62		
BLOB-Y	64		
BRTC	25	Sub-Brightness	See section 3.5 for detailed

3.5 Sub brightness adjustment

1. Input eight steps gray signal.
2. Press key “3” to enter sub-brightness adjustment.
3. At dynamic state, adjust “BRTC” until the secondary gray bar just to be seen. (like picture 3.5.)

The 2nd gray scale



Picture 3.5

3.6 Picture Geometry adjustment

3.6.1 Vertical geometry adjustment

1. Input a PAL crosshatch pattern signal to RF input.
2. Enter P-Mode, press key “1” to select vertical geometry adjustment. (The OSD menu for this adjustment as below table 3.6.1. For NTSC signal, the “-50” will be replaced with “-60”.)
3. Adjust the value of the corresponding item to make the vertical geometry of the pattern look good.
4. Apply NTSC signal to adjust these value for NTSC vertical geometry.

Table 3.6.1: The vertical geometry adjustment OSD menu

OSD menu	Default Value	Description	Remark
VSLOPE-50	32	Vertical slope(VS)	Adjust to right value
VCEN-50	32	Vertical shift (VSH)	Adjust to right value
VSIZE-50	32	Vertical amplitude(VA)	Adjust to right value
VZOOM-50	25	Vertical zoom(VX)	Adjust to right value
VSC-50	32	S-correction(SC)	Adjust to right value
VSCROLL-50	32	Vertical Scroll（VCS）	Adjust to right value

Note:

1. For NTSC signal, the “-50” will be replaced with “-60”.
2. For NTSC signal, only the **“VCEN-60”** and **“VSIZE-60”** items need the adjustment, the other items use the same data as PAL signal.

3. On producing, please use the **"AUTO OFFSET"** (On page "2") function to easy the geometry adjustment of NTSC signal. When finished the PAL signal geometry adjustment, press "2" key to enter page "2" to select "AUTO OFFSET" item, press "►" key to active the automatic offset function. Then the geometry adjustment of NTSC signal will finish automated. If the geometry of NTSC signal is look good, you don't need to adjust the geometry of NTSC signal any more.

3.6.2 Horizontal geometry adjustment

1. Input a PAL crosshatch pattern signal to RF input.
2. Enter P-Mode, press key "2" to select horizontal geometry adjustment. (The OSD menu for this adjustment as below table 3.6.2. For NTSC signal, the "-50" will be replaced with "-60".)
3. Adjust the value of the corresponding item to make the horizontal geometry of the pattern look good.
4. Apply NTSC signal to adjust these value for NTSC horizontal geometry.

Table 3.6.2: The horizontal geometry adjustment OSD menu

OSD menu	Default Value	Description	Remark
HCEN-50	32	Horizontal shift(HSH)	Adjust to right value
HSIZE-50	32	EW width(EWW)	Adjust to right value
HPARA-50	32	EW parabola width(PW)	Adjust to right value
HTRAP-50	32	EW trapezium(TC)	Adjust to right value
HCNRT-50	32	EW upper corner parabola(UCP)	Adjust to right value
HCNRB-50	32	EW lower corner parabola(LCP)	Adjust to right value
HBOW-50	32	Horizontal bow(HB)	Adjust to right value
HPARALLEL	32	Horizontal parallelogram(HP)	Adjust to right value
AUTO OFFSET	0	Automatic offset NTSC geometry	See below description for detailed

Note:

1. For NTSC signal, the "-50" will be replaced with "-60".
2. For NTSC signal, only the **"HCEN-60"** and **"HSIZE-60"** items need the adjustment, the other items use the same data as PAL signal.
3. On producing, please use the **"AUTO OFFSET"** (On page "2") function to easy the geometry adjustment of NTSC signal. When finished the PAL signal geometry adjustment, press "2" key to enter page "2" to select "AUTO OFFSET" item, press "►" key to active the automatic offset function. Then the geometry adjustment of NTSC signal will finish automated. If now the geometry of NTSC signal is look good, it not needed to adjust the geometry of NTSC signal any more.

3.7 Producing parameter setup and option

1. Enter P-Mode, press key “4” to select page “4”.Set the corresponding item to require value. See below table 3.7.1 for detailed description.

Table 3.7.1: Producing parameter setup and option page “4”

OSD menu	Default Value	Description	Remark
WARM UP STATUS	0	Set aging mode	0=Aging mode off
			1=Aging mode on
SHOP INIT	0	Set the shopping status	0=>1= Set the shopping status
DCXO	2	Crystal oscillator frequency adjustment	Adjust this value to get the max color synchronization range. Don’t adjust, use default value for producing
FACTORY HOTKEY	1	Set factory hotkey	0=”FACTORY HOTKEY” off
			1=”FACTORY HOTKEY” on
POWER ON MODE	LAST	Set the power on mode	ON=On when power on
			STB=Standby when power on
			LAST=Last power off status
EEPROM INIT	0	EEPROM initial	0=>1=Active EEPROM initial
POWER LOW	101	Set the “Voltage display” “LOW” and “HIGH” threshold	Recommended value= “16”
POWER HIGH	176		Recommended value= “168”
DEFAULT SND. SYS	DK	Set the default sound system when auto store	Set the right value according to the sales area
BLUE BACK OPT	2	Set the Background option while no signal	0= Blue background for TV and AV while no signal
			1=Black background for TV and AV while no signal
			2=Snowy background for TV and black background for AV while no signal
BLACK BRI	40	Set the black background brightness while no signal	Recommended value= “20”
BRI CURVE	>>	Set the brightness curve	Press **“►◄”** or **“VOL+ VOL-”** key to enter a sub-menu to do the setup, and press **“MENU”** key the previous menu
CON CURVE	>>	Set the contrast curve	
COL CURVE	>>	Set the colour curve	
VOL CURVE	>>	Set the volume curve	

Description:

1). Set the shopping status

When trigger the “SHOP INIT” item form “0” to “1”, the TV will be put on selling status.

The TV status after shopping status:

A. “FACTORY HOTKEY” had set to “OFF”.

B. Picture set to “Standard” status. (Brightness=50, Contrast=50, Colour=50, White tone=Normal.)

C. Sound set normal.(Volume=30,Balance=50.)

D.

2). Set the user picture and sound curve value

A. Brightness curve:

OSD menu	Default Value	Description	Remark
BRI0	0	Set the minimal brightness when user Brightness=0	Set to 3
BRI50	32	Set the brightness when user Brightness=50	Use default value
BRI100	63	Set the maximal brightness when user Brightness=0	

B. Contrast curve:

OSD menu	Default Value	Description	Remark
CON0	0	Set the minimal contrast when user Contrast=0	Set to 3
CON50	32	Set the contrast when user Contrast=50	Use default value
CON100	63	Set the maximal contrast when user Contrast=0	

C. Colour curve: **(For AP2 version)**

OSD menu	Default Value	Description	Remark
COL0	0	Set the minimal colour when user Colour=0	Set to 3
COL50	40	Set the colour when user Color=50	Use default value
COL100	63	Set the maximal colour when user Colour=0	

C. Colour curve: **(For AP1&AP3 version)**

OSD menu	Default Value	Description	Remark
COL0	0	Set the minimal colour when user Colour=0	Set to 3
COL50	32	Set the colour when user Color=50	Use default value
COL100	63	Set the maximal colour when user Colour=0	

D. Volume curve:

OSD menu	Default Value	Description	Remark
VOL0	0	Set the volume when user Volume=0	Use default value
VOL10	38	Set the volume when user Volume=10	
VOL30	65	Set the volume when user Volume=30	Set to 63
VOL50	71	Set the volume when user Volume=50	Set to 69
VOL80	77	Set the volume when user Volume=80	Set to 75
VOL100	83	Set the volume when user Volume=100	Set to 81

3). Set the value for “POWER LOW” and “POWER HIGH”

A. Connect the main voltage at low threshold 95VAC/50Hz.

B. Select item “POWER LOW”.

C. Adjust the value until the hint display just change between “AC: NORMAL” and “AC: LOW”.
D. Connect the main voltage at high threshold 255VAC/50Hz.
E. Select item “POWER HIGH.
F. Adjust the value until the hint display just change between “AC: NORMAL” and “AC: HIGH”.

2. Enter P-Mode, press key “5” to select page “5”. Set the corresponding item to require value. See below table 3.7.2 for detailed description.

Table 3.7.2: Producing parameter setup and option page “5”

OSD menu	Default Value	Description	Remark
Track. Mode	1	EHT tracking mode	0=EHT tracking only on vertical
			1=EHT tracking on vertical and EW
VX Normal	25	4:3 mode vertical zoom	Don’t adjust, use default
VX Compr.	0	16:9 mode vertical zoom	Don’t adjust, use default
WBF	5	Wide blanking start	Don’t adjust, use default
WBR	8	Wide blanking end	Don’t adjust, use default
GET OFFSET	0	Get offset	See below description for detailed
ColdRC	61	Cold color temperature R and G cut-off offset	Recommended value= “61”
ColdGC	56		Recommended value= “56”
ColdRD	61	Cold color temperature R and G drive offset	Recommended value= “61”
ColdGD	66		Recommended value= “66”
WarmRC	72	Warm temperature R and G cut-off offset	Recommended value= “72”
WarmGC	71		Recommended value= “71”
WarmRD	65	Warm color temperature R and G drive offset	Recommended value= “65”
WarmGD	64		Recommended value= “64”

Description for AUTO OFFSET and GET OFFSET:

The **“GET OFFSET”** can use to make the EEPROM copy by PE engineer. When the PAL and NTSC geometry adjustment had finished, trigger the “GET OFFSET” from “0” to “1” to store the geometry offset datum between PAL and NTSC in EEPROM.

On producing, these geometry offset datum can use to easy the NTSC geometry adjustment. When finished the PAL geometry adjustment, trigger the “AUTO OFFSET” from “0” to “1”, then the geometry adjustment of NTSC signal will finish automated. If now the geometry of NTSC signal is look good, it not needed to adjust the geometry of NTSC signal any more.

3. Enter P-Mode, press key “6” to select page “6”. Set the corresponding item to require value. See below table 3.7.3 for detailed description.

Table 3.7.3: Producing parameter setup and option page “6”

OSD menu	Default Value	Description	Remark
AGCT	32	AGC take over point	See section “3.2 RF AGC alignment”

AGC	0	AGC take over point indicate	for detailed.
OIF	32	IF demodulator offset	Don't adjust, use default
IF	38.90	IF frequency	Select the IF frequency
AGCS	1	AGC speed	Don't adjust, use default
AGNE	3	Audio gain	Don't adjust, use default

4. Enter P-Mode, press key "7" to select page "7". Set the corresponding item to require value. See below table 3.7.4 for detailed description.

Table 3.7.4: Producing parameter setup and option page "7"

OSD menu	Default Value	Description	Remark
EVG	0	Enable vertical guard(RGB blanking)	1= RGB blanking
DFL	0	Disable flash protection from deflection timer	Don't adjust, use default
XDT	0	X-ray detection	Don't adjust, use default
AKB	0	Black current stabilization	1=Disable 0= Enable
NBL	0	Black current loop application	1=Disable 0= Enable
OSVE	0	Black current measuring lines in over scan(for vertical zoom setting <1)	Don't adjust, use default
CL	10	Set the cathode drive level	Adjust to right value accord with the tube. Recommended value= "12"
NTSCM	0	RF NTSC M enable	0=Disable 1= Enable
NTSC443	0	AV NTSC443 enable	
LNA ENABLE	0	LNA（high sensitivity）enable	0=Disable 1= Enable
LNA MODE	0	LNA tuner select	0: TCL tuner 1:Philips tuner
GAME ENABLE	0	Game and calendar enable	0=Disable 1= Enable
BLACK LIGHT	0	Software Dischanges enable	0=Disable(except NX56C) 1= Enable(nx56c)

5. Enter P-Mode, press key "8" to select page "8". Set the corresponding item to require value. See below table 3.7.5 and table 3.7.6 for detailed description.

Table 3.7.5: Producing parameter setup and option page "8"(For AP2 version)

OSD menu	Default Value	Description	Remark
HOTEL	0	Hotel mode enable	0=Disable 1= Enable
A2 THAI	1	Thailand dual language enable	
PIC PRESET	1	Picture preset enable	
AV ALIGMENT	1	Rear AV terminal align(SCART Set “0”)	0=3 x 3
			1=4 x 3
SHVS ENABLE	1	S-Video terminal enable	0=Disable 1=Enable
YUV ENABLE	1	YUV terminal enable	
NOCOMMAND ENABLE	0	No operation within 2 hours automatic standby enable	
ARABIC*	1	Arabic enable	
RUSSIAN*	1	Russian enable	
FRENCH*	1	French enable	
FARSI*	1	Farsi enable	
TUNER TYPE*	1	Select tuner type	0=xinfa(07-389FI5-NF3T) tuner
			1=TCL tuner
AV STANDB	0	AV no signal within 10 minutes automatic standby	0=Disable
			1=Enable
AVOUT FOLLOW	1	AV output source follow	0=Follow TV
			1=Follow source

Table 3.7.6: Producing parameter setup and option page “8”(For AP1&AP3 version)

OSD menu	Default Value	Description	Remark
HOTEL	0	Hotel mode enable	0=Disable 1= Enable
A2 THAI	1	Thailand dual language enable	
HEALTH FLAT	1	Health platform TV enable	
AC DISPLAY	0	AC voltage checking enable	
AV ALIGMENT	1	Rear AV terminal align(SCART Set “0”)	0=3 x 3
			1=4 x 3
AV2 ENABLE	1	AV2 input enable	0=Disable 1=Enable
SHVS ENABLE	1	S-Video terminal enable	
YUV ENABLE	1	YUV terminal enable	
NOCOMMAND ENABLE	0	No operation within 2 hours automatic standby enable	
THAI*	1	Thai enable	
VIET*	1	Vietnamese enable	
TUNER TYPE*	1	Select tuner type	Note 1
			1=07-389FI5-NA3G

AV STANDB	0	AV no signal within 10 minutes automatic standby	0=Disable
			1=Enable
AVOUT FOLLOW	1	AV output source follow	0=Follow TV
			1=Follow source

*Note: When change the Language or the tuner type, you must AC restart the TV set to make it active.

Note 1： TUNER TYPE=0 07-389FI5-NF3T, 07-389FI5-NF2XG, 07-389FI5-NA2XG, 07-389FI5-SA0XG

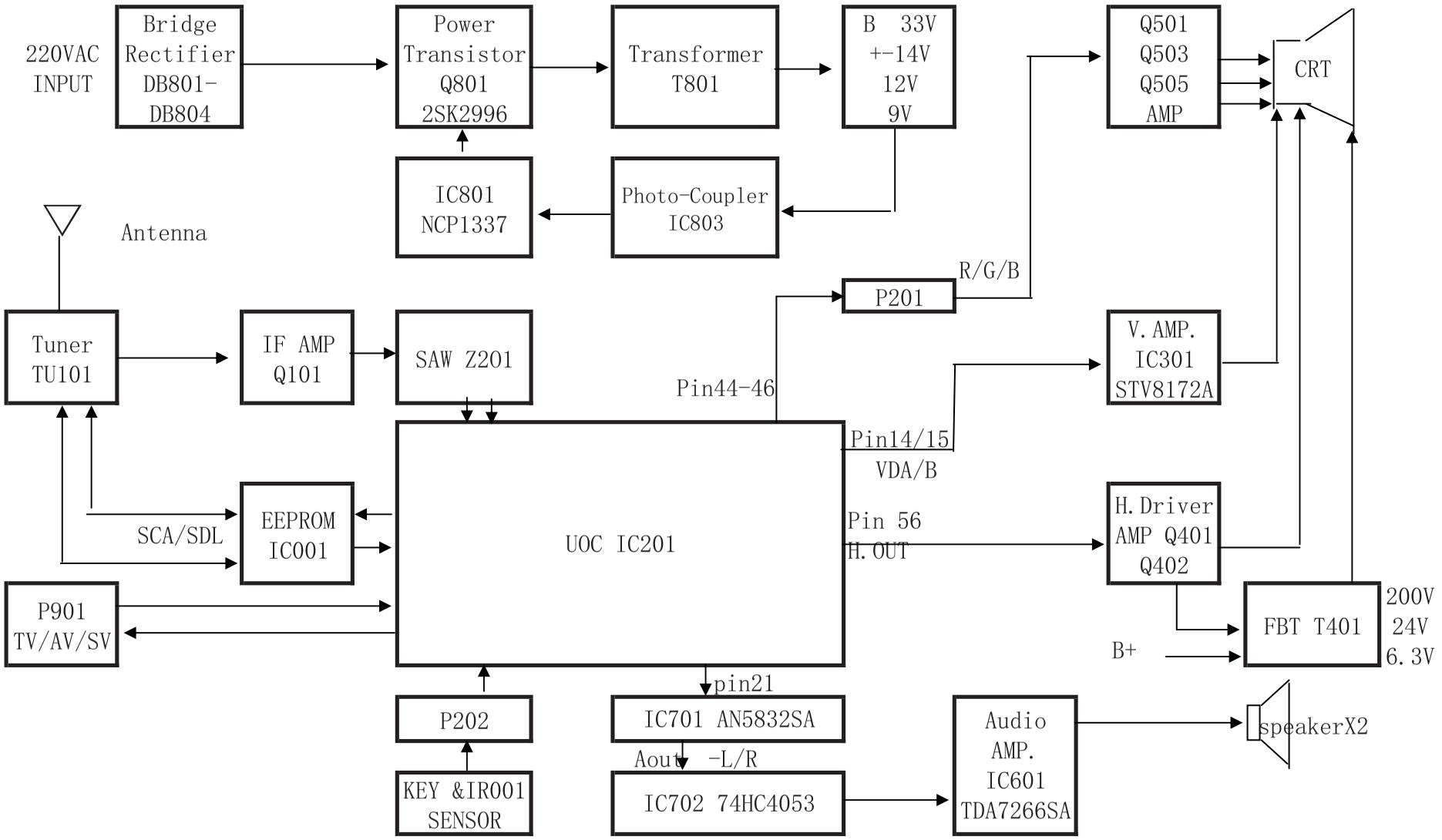
6. Enter P-Mode, press key “FAV” to select page “9”. Set the corresponding item to require value. See below table 3.7.7 for detailed description.

Table 3.7.7: Producing parameter setup and option page “9”

OSD menu	Default Value	Description	Remark
BKS	1	Black stretch enable	0=Disable
			1=Enable
BSD	0	Black Stretch depth	0=15IRE
			1=30IRE
AAS	0	Black area to switch off the black stretch	0=12%
			1=20%
			2=6%
			3=8%
RPA	0	Ratio of pre- and after shoot	0=1:1
			1=1.5:1
			2=2:1
RPO	2	Ratio of positive and negative peaks	0=1:1
			1=1:1.3
			3=1:1.7
			4=1:0.7
SOC	1	Soft clipping level above PWL	0=0%
			1=5%
			2=10%
			3=Soft clipping off
COR	0	Video peaking active range	0=off
			1= between 0 and 20 IRE
			2= between 0 and 40 IRE
			3= between 0 and 100 IRE

3.8 Screen voltage (VG2) adjustment with AKB function

1. Put the TV in AV source without input signal.
2. Enter P-Mode, press RC key "AT", there will display
3. Adjust the "SCREEN" VR of the FBT until VG2 hint display (LOW/OK/HIGH) display "OK" stably.
4. Press “MENU” return to P-Mode.


220VAC
INPUT
Bridge
Rectifier
DB801-
DB804
Power
Transistor
Q801
2SK2996
Transformer
T801
B 33V
+-14V
12V
9V
Q501
Q503
Q505
AMP
CRT
IC801
NCP1337
Photo-Coupler
IC803
Antenna
R/G/B
P201
Tuner
TU101
IF AMP
Q101
SAW Z201
Pin44-46
V. AMP.
IC301
STV8172A
Pin14/15
VDA/B
EEPROM
IC001
SCA/SDL
UOC IC201
Pin 56
H. OUT
H. Driver
AMP Q401
Q402
P901
TV/AV/SV
FBT T401
200V
24V
6.3V
B+
pin21
P202
IC701 AN5832SA
Audio
AMP.
IC601
TDA7266SA
speakerX2
Aout -L/R
KEY &IR001
SENSOR
IC702 74HC4053

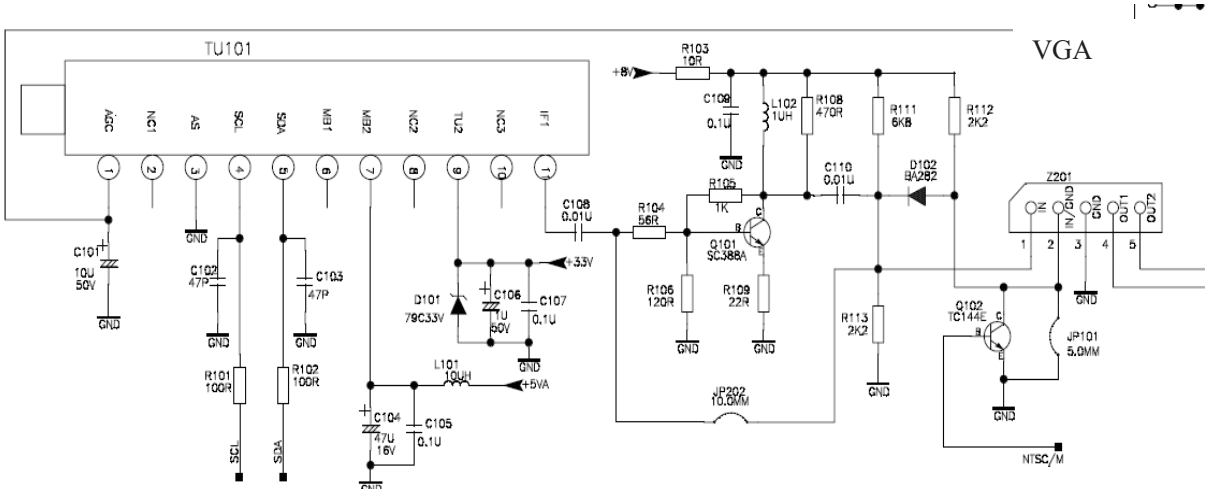
NX56 Chassis Signal Processing Introduction

Brief introduction

For different market requirements, our design it in two versions, one is for Latin America, we call the chassis as NX56-LA, the another one is for Asia Pacific Area, we call the chassis as NX56-AP. NX56-LA and NX56-AP adopt different UOC, The UOC for Latin America have CCD-Chip and BTSC function, so added AN5832SA to realize BTSC, but the UOC for Asia Pacific region does not have the two functions but SECAM system is necessary. NX56 Chassis not only match 21inches CRT, but also match 25 and 29inches CRT. Due to different screen sizes, maybe adopt different audio power amplifiers. The others should be the same. No matter NX56-AP what NX56-LA, they are use same main PCB board, just different peripheral components.

RF Section

Tuner Tu101 receive the radio frequency signal, after inside circuit to do signal receiving, and signal amplifying. The amplified high frequency signal accompany with the high frequency oscillation voltage oscillated by set oscillator input to the mixer. The IF picture signal and sound signal formed in mixer and output from mixer, then send to picture IF processing circuit.



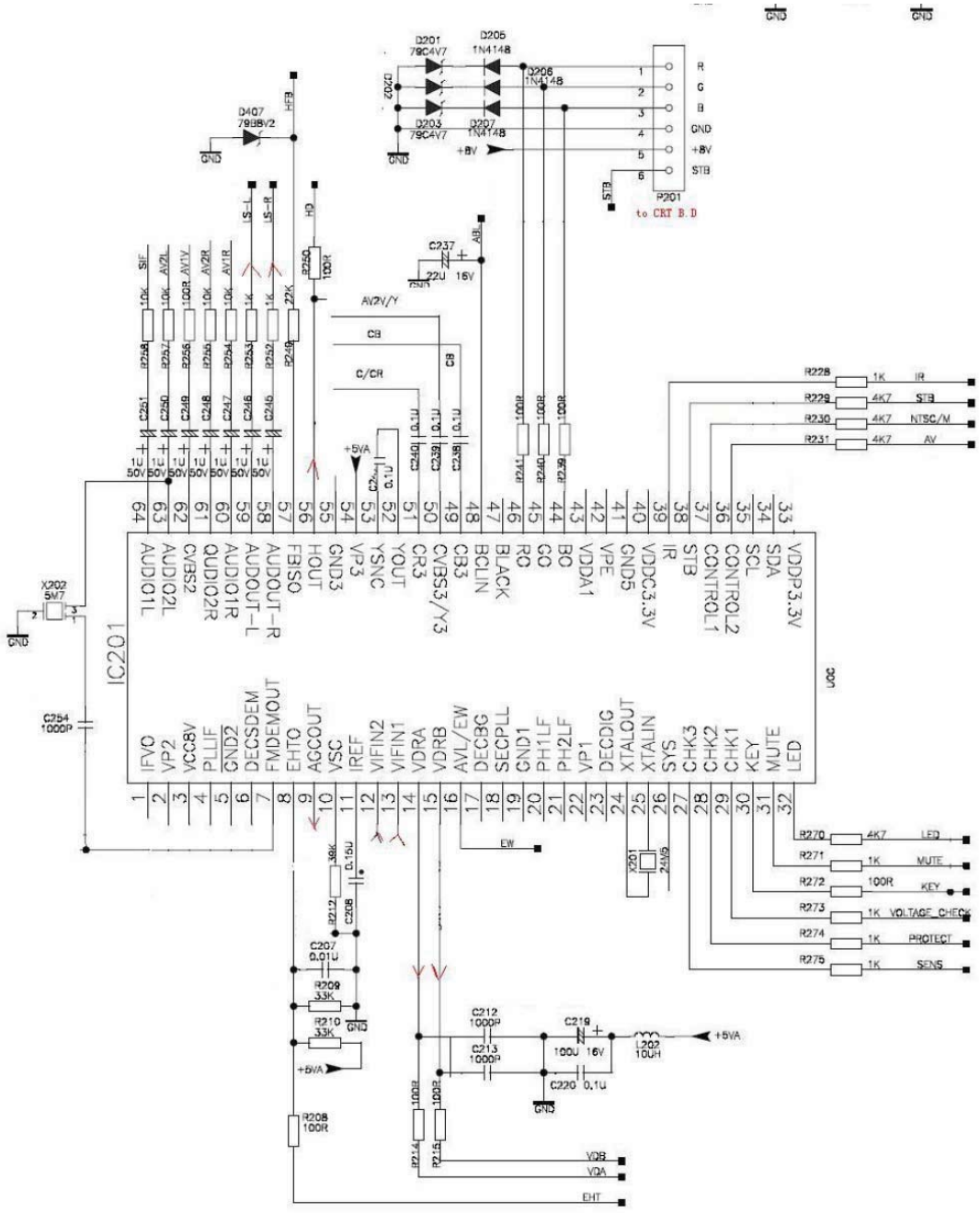
(Fig. 1. Tuner section)

Small Signal Processing Section

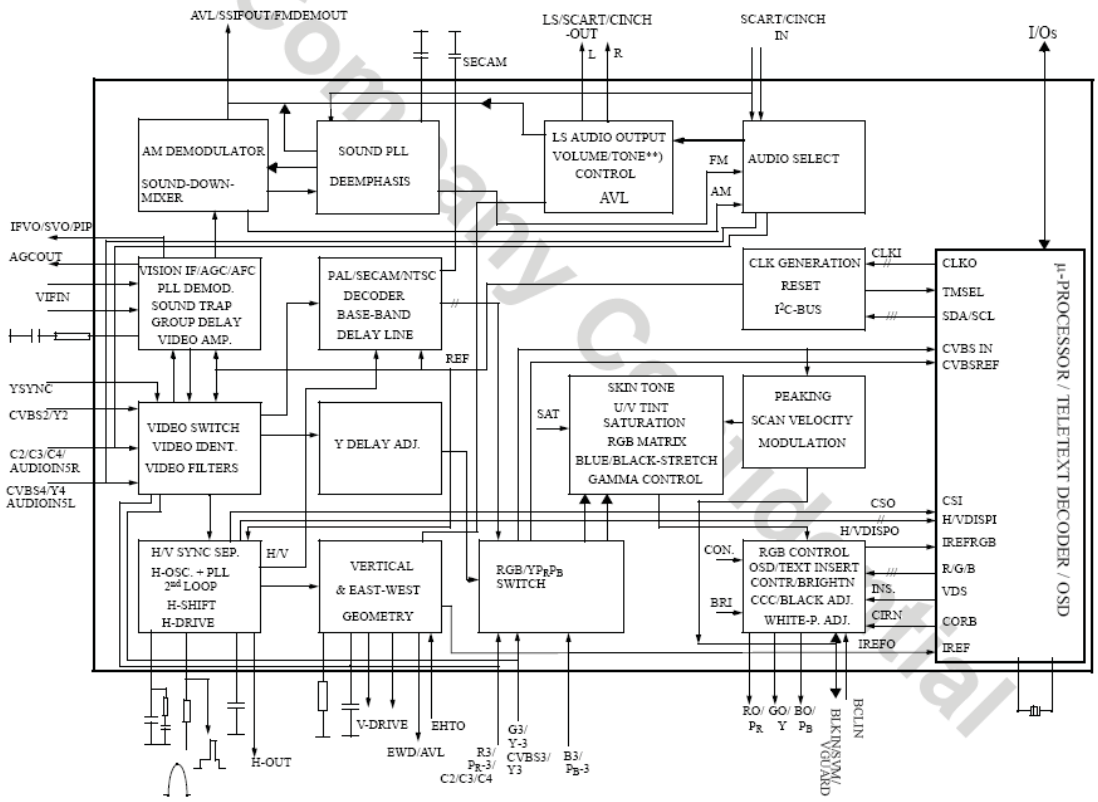
Small signal processing section is the IF (intermediate frequency) signal across saw filter send in the pin12 and pin13 of IC201. The VIFIN signal through built-in PLL DEMOD, sound trap, video amplifier and synchronous detector processing, get the color video broadcast signal and 2nd sound IF signal.

Video signal processing section is CVBS across video filter and delay line and horizontal & vertical synchronous separation circuit processing and get H-drive (pin56 of IC201)and V-drive signal (pin15/pin15 of IC201).

IF sound signal across the sound-down-mixer and AM demodulator processing, send out the AVL/ SSIF OUT signal. (Refer to Fig2 and Fig 3.)



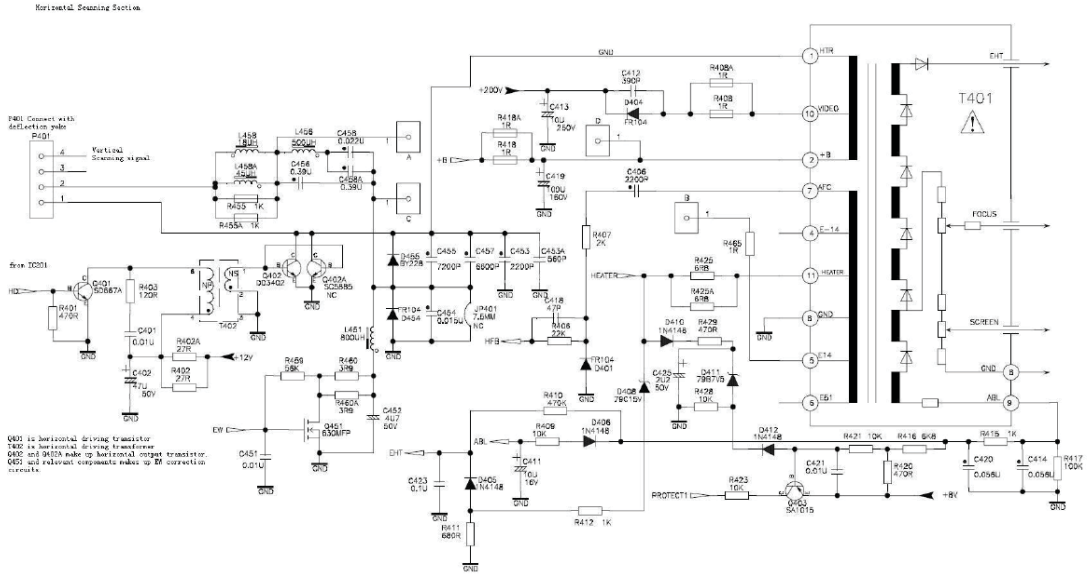
(Fig 2. Small Signal Processing Section)



(Fig3. Block Diagram of IC201.)

Horizontal Scanning Section

The horizontal drive signal send out from pin 56 of IC201, Q401 is horizontal driving transistor, coupled by horizontal driving transformer T402 , to control the horizontal output transistor working in switch on and off situation, get good linearly and enough amplitude of saw-tooth wave current to drive horizontal deflection yoke scanning. L456 is horizontal width coil and L458 is horizontal linearly coil. D455 is damping diode, C453,C455,C457 are retrace capacitors. T401 is FBT. Pin2 of T401 is B+ voltage input, Pin 10 of T401 get 200 Volt video amplifying voltage supply for CRT board. Pin11 of T401 sends out heater voltage supply for CRT heater.



Vertical Scanning Section

Vertical scanning section adopted STV8172A vertical deflection booster, we use as differential-output driver. The vertical raw-tooth wave signal sends out from pin14/15 of IC201 VDA/VDB. The two differential signal input pin 1 and 7 of STV8172A IC301. Pin2(+14v) and Pin7(-14v) of IC301 is power supply which come from the main power transformer. Pin 6 is boost voltage, rectified by D301. C309,C301 and R305 makes up a voltage feedback network, R306 is a damping resistor. C306 is correction capacitor, R308 is current feedback resistor.

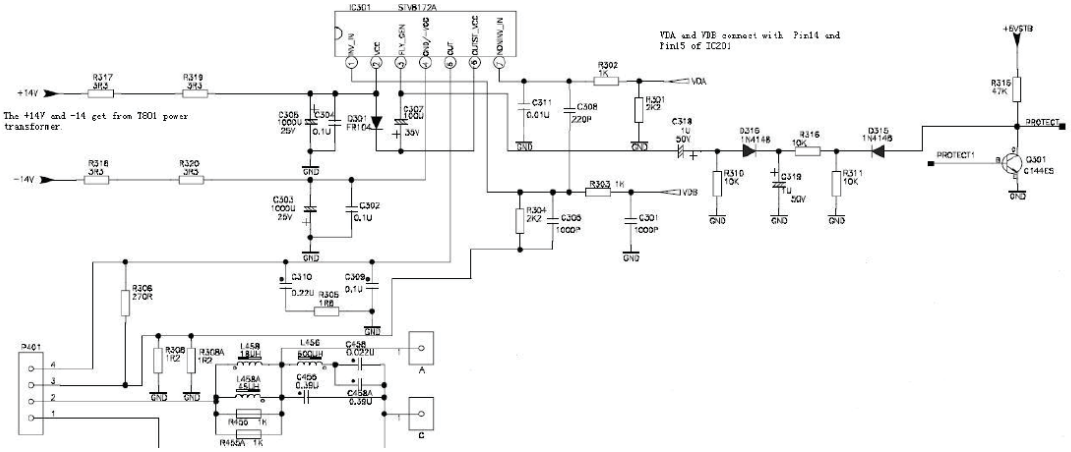
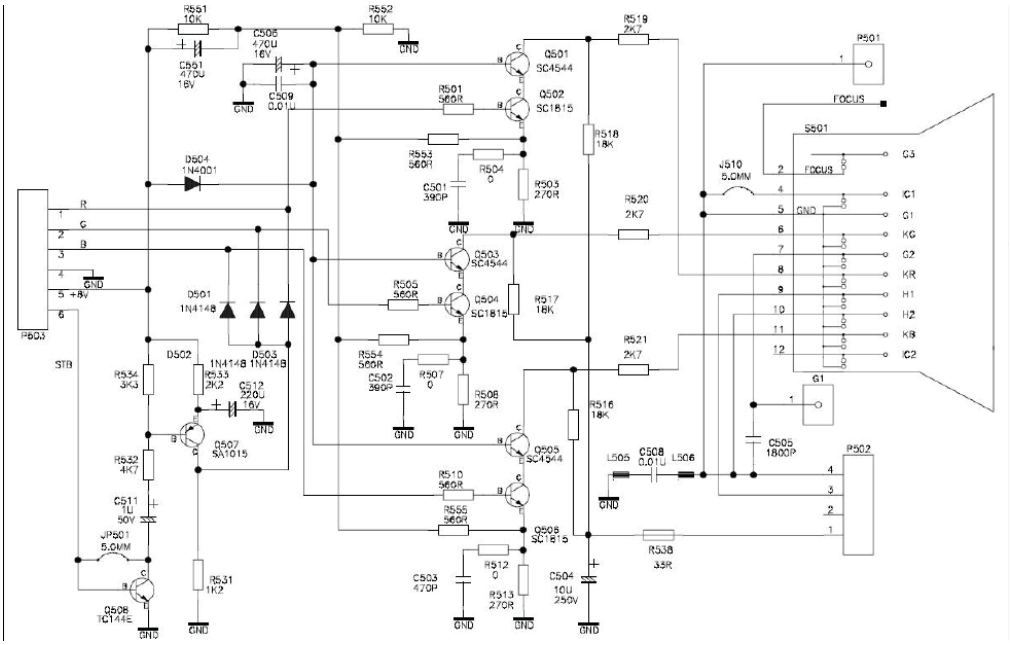


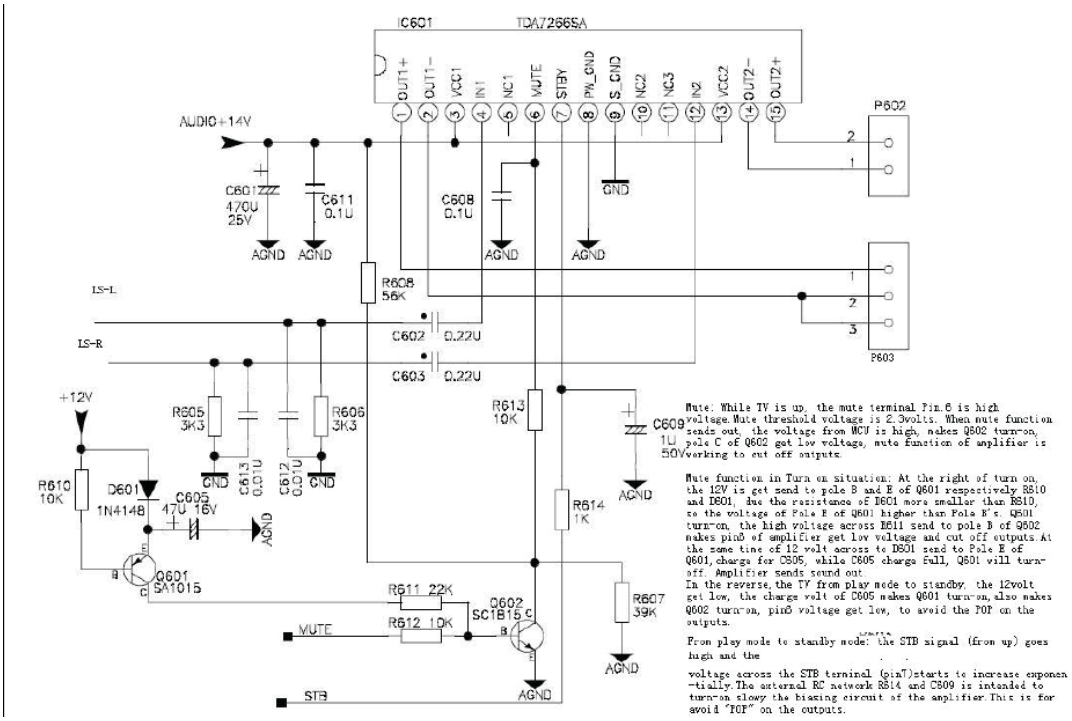
Fig 4. Vertical Scanning Processing Section

CRT Scanning Section

Q507,D501,D502 and D503 makes up a light eliminate circuit network. When the TV is playing mode, +8V voltage across R533 charge for C512, Q507 is cut off. At the right of turn off the TV, Q507 is turn-on, the current across D501, D502 and D503 send to R.G. B to discharge the electronic quickly.

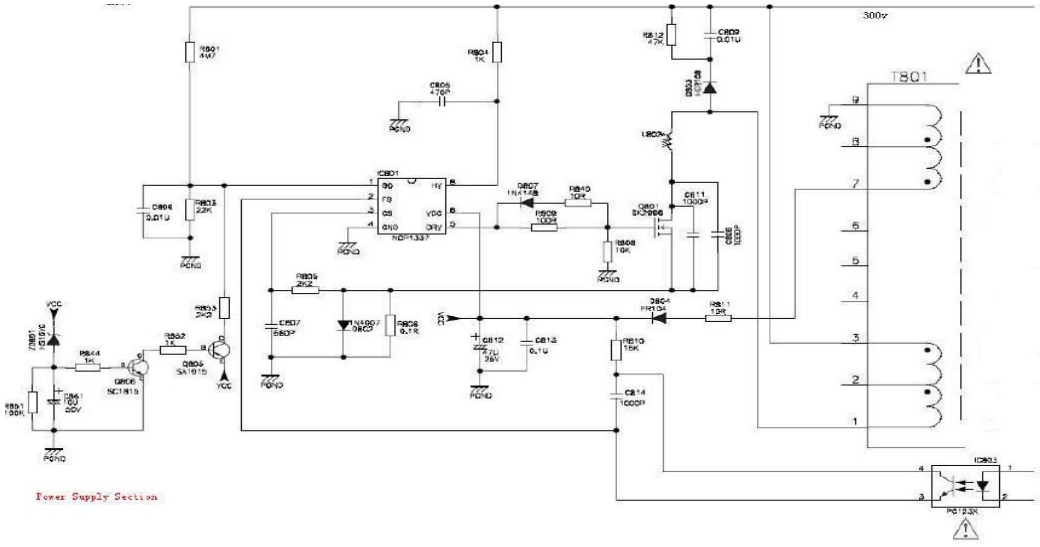


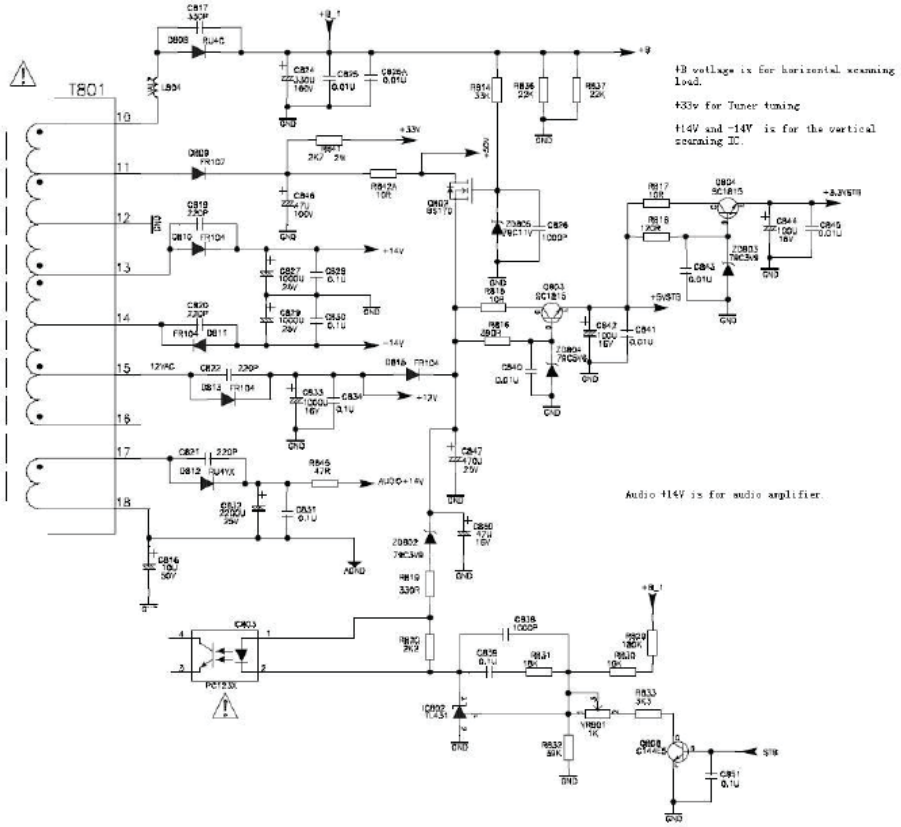
Audio Power Amplifying Section


IC601
TDA7266SA
OUT1+
OUT1-
VCC1
IN1
NC1
MUTE
STBY
PW_GND
S_GND
NC2
NC3
IN2
VCC2
OUT2-
OUT2+
P602
P603
AUDIO+14V
C601 470U 25V
C611 0.1U
C608 0.1U
GND
AGND
R608 56K
LS-L
LS-R
C602 0.22U
C603 0.22U
+12V
R605 3K3
R606 3K3
C613 0.01U
C612 0.01U
R613 10K
C609 1U 50V
R610 10K
D601 1N4148
C605 470U 16V
R614 1K
Q601 SA1015
R611 22K
Q602 SC1815
R612 10K
MUTE
R607 39K
STB
Mute: While TV is up, the mute terminal Pin.6 is high voltage. Mute threshold voltage is 2.3volts. When mute function sends out, the voltage from MCU is high, makes Q602 turn-on, pole C of Q602 get low voltage, mute function of amplifier is working to cut off outputs.
Mute function in Turn on situation: At the right of turn on, the 12V is get send to pole B and E of Q601 respectively R610 and D601, due the resistence of D601 more smaller than R610, so the voltage of Pole E of Q601 higher than Pole B's. Q601 turn-on, the high voltage across R611 send to pole B of Q602 makes pin5 of amplifier get low voltage and cut off outputs. At the same time of 12 volt across to D601 send to Pole E of Q601, charge for C605, while C605 charge full, Q601 will turn-off. Amplifier sends sound out.
In the reverse, the TV from play mode to standby, the 12volt get low, the charge volt of C605 makes Q601 turn-on, also makes Q602 turn-on, pin5 voltage get low, to avoid the POP on the outputs.
From play mode to standby mode: the STB signal (from up) goes high and the
voltage across the STB terminal (pin7) starts to increase exponen-tially. The external RC network R614 and C609 is intended to turn-on slowly the biasing circuit of the amplifier. This is for avoid "POP" on the outputs.

Power Supply Section

AC supply 220V/110v through filtering network and rectifying circuit and get 300Vdc voltage. LF801/LF801A and CX802 makes up a differential mode rejection, LF802 and CY801,CY802 makes up a common mode rejection network. D801-D804 is rectifying network. 300Vdc voltage supply pin3 of T801, also through R804 send to pin8 of IC801 NCP1337. Pin5 of IC801 sends out the PWM signal to control Q801 working in switch on and off situation. IC803 is optocoupler.




T801
10
11
12
13
14
15
16
17
18
12VAC
+9
+33V
+14V
-14V
+12V
+5VSTB
+8.2VSTB
AUDIO+14V
AGND
GND
STB
+B_1
IC803
PC123X
IC802
KA431
Q804
SC1815
Q803
SC1815
Q808
C1740
VR801
1K
R833
363
R832
5K
R831
10K
R830
10K
R829
180K
R819
330R
R820
2K2
R814
33R
R836
22K
R837
22K
R817
10R
R818
120R
R816
2R2
R815
10R
R841
0.01U
R842A
10R
R843
0.01U
C844
2200U
16V
C845
0.01U
C847
2200U
25V
C848
47U
16V
C849
0.1U
C850
0.1U
C851
0.1U
C852
2200U
25V
C853
0.1U
C854
2200U
160V
C855
0.01U
C856
1000P
C857
1000U
25V
C858
0.1U
C859
1000U
25V
C860
0.1U
C831
0.1U
C832
2200U
25V
C833
2200U
16V
C834
0.1U
C835
1000P
C836
0.1U
C837
0.1U
C838
1000P
C839
0.1U
C840
0.01U
C841
100U
16V
C842
2200U
25V
C843
0.01U
C846
2200U
160V
C847
2200U
25V
C848
47U
16V
C849
0.1U
C850
0.1U
C851
0.1U
C852
2200U
25V
C853
0.1U
C854
2200U
160V
C855
0.01U
C856
1000P
C857
1000U
25V
C858
0.1U
C859
1000U
25V
C860
0.1U
C831
0.1U
C832
2200U
25V
C833
2200U
16V
C834
0.1U
C835
1000P
C836
0.1U
C837
0.1U
C838
1000P
C839
0.1U
C840
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25V
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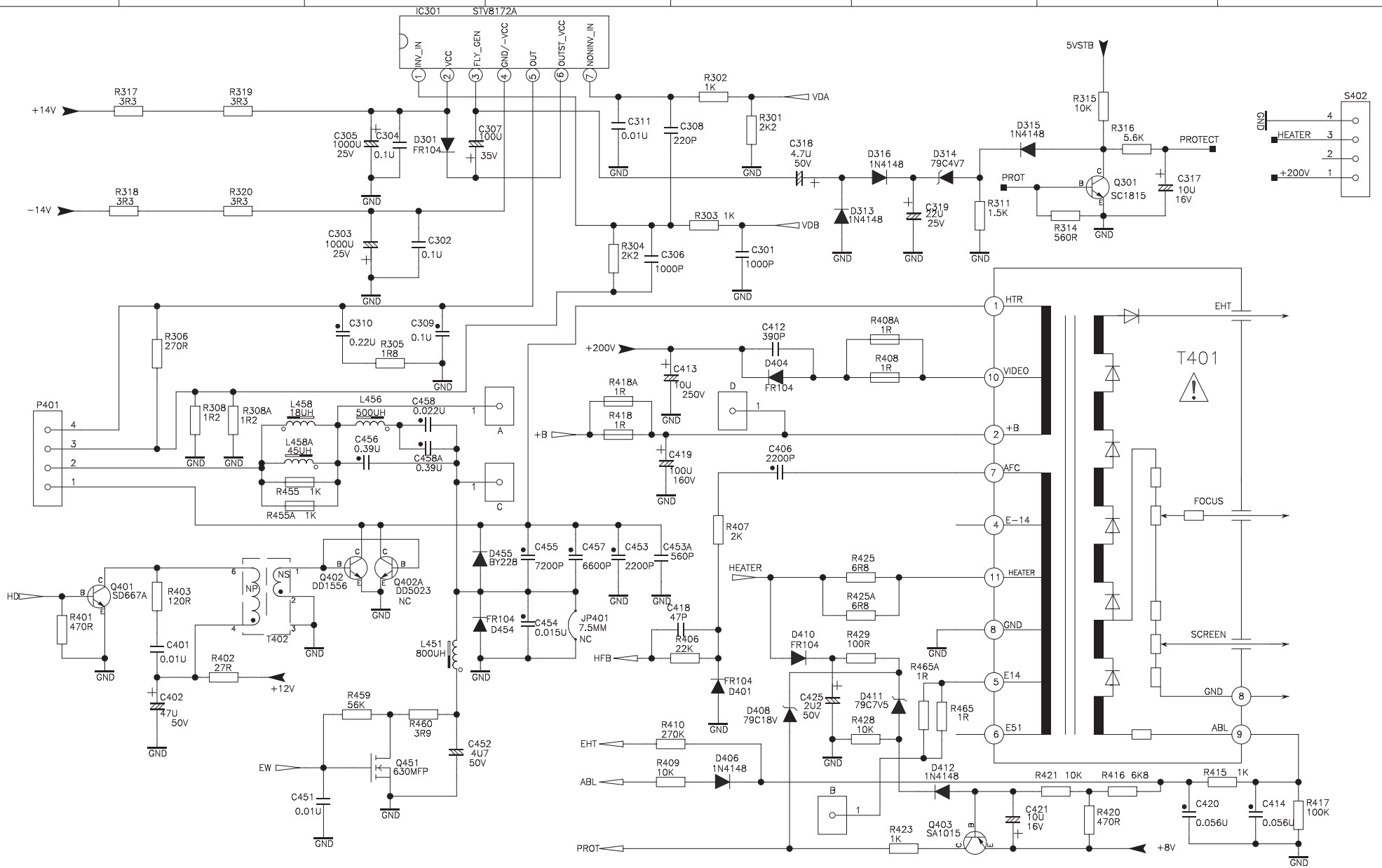
2200U
16V
C845



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DESIGNATION

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TCL Thomson Electronics Ltd.
B Building, TCL Tower, Nanhai Road
Nanshan District, Shenzhen, Guangdong
Tel +86-755-3331xxxx Fax +86-755-3331xxxx

DRAWN ON: BY:

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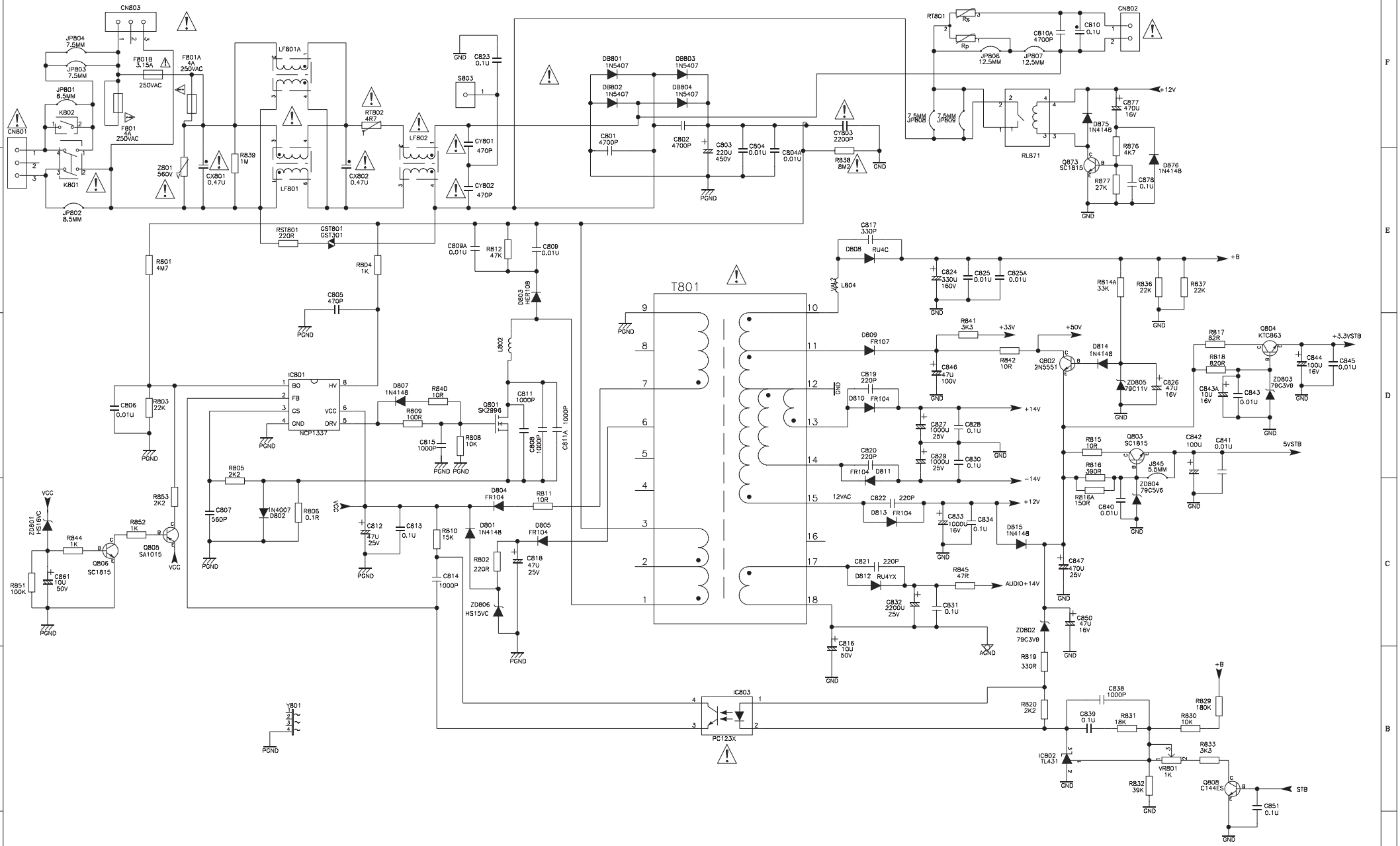

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01-00*NX*56-*MA2*

TCL Thomson Electronics Ltd.
B Building, TCL Tower, Nanhai Road
Nanshan District, Shenzhen, Guangdong
Tel +86-755-3331xxxx Fax +86-755-3331xxxx

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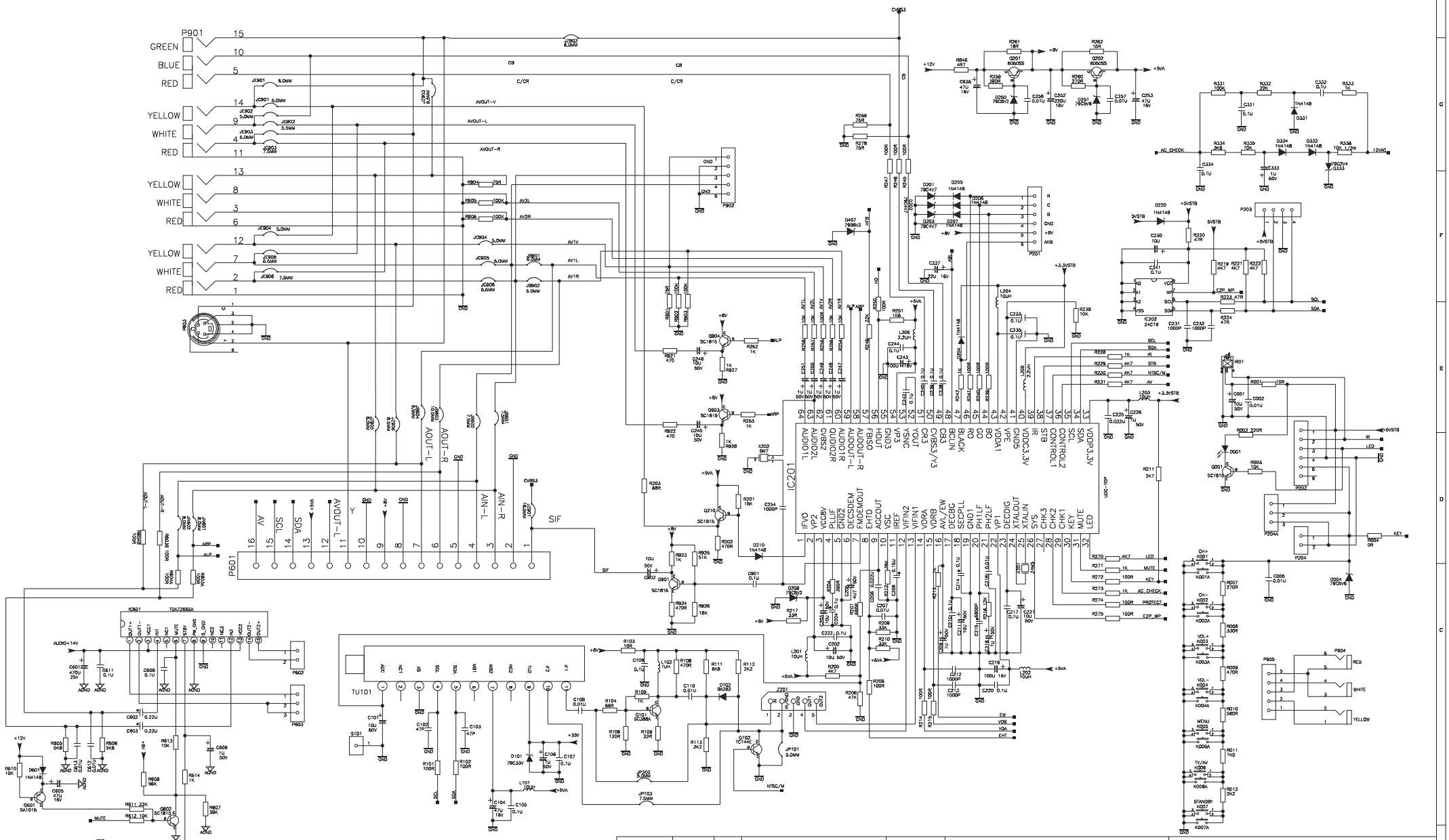

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TCL Thomson Electronics Ltd.
B Building, TCL Tower, Nanhai Road
Nanshan District, Shenzhen, Guangdong
Tel +86-755-3331xxxx Fax +86-755-3331xxxx

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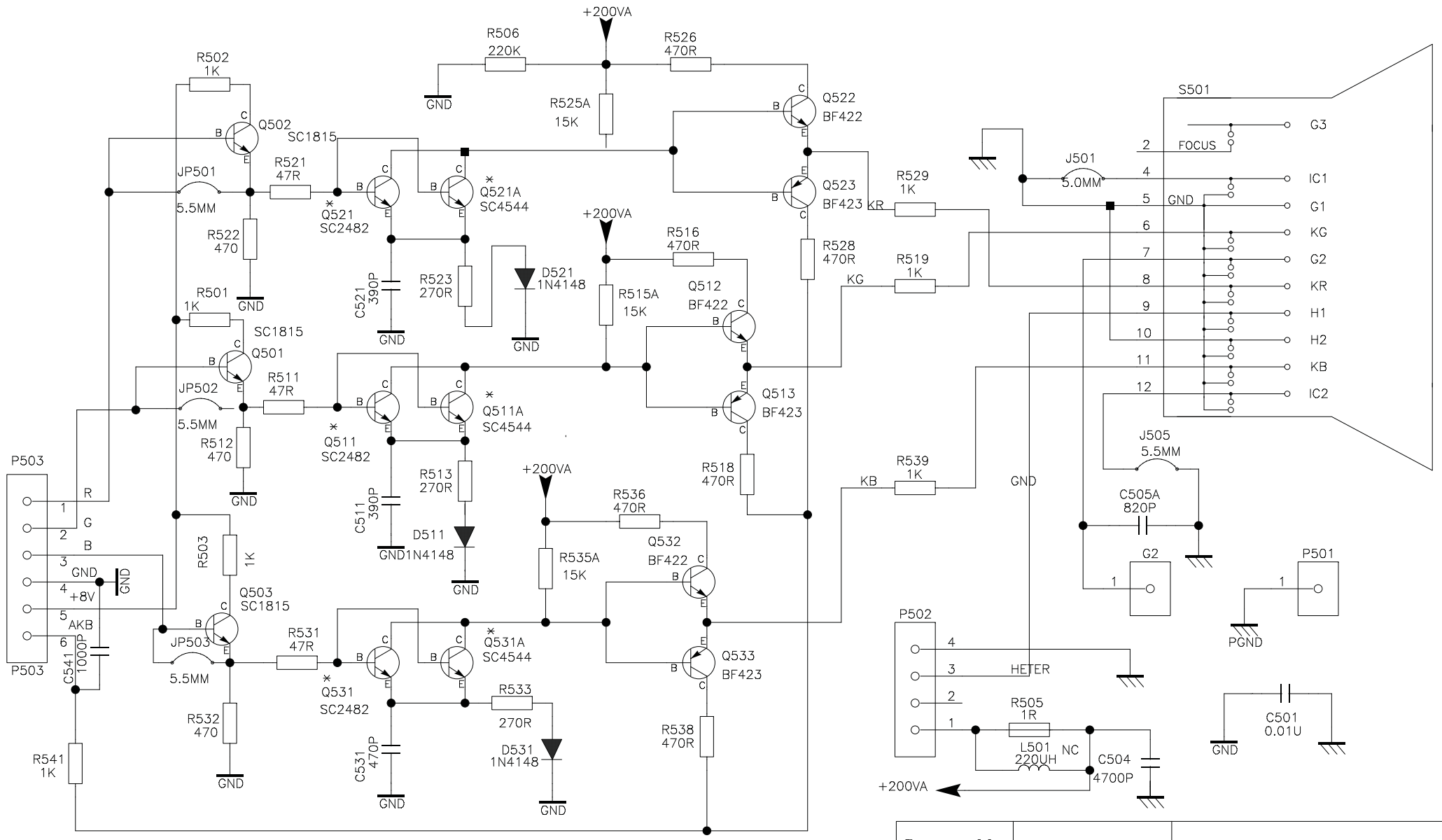
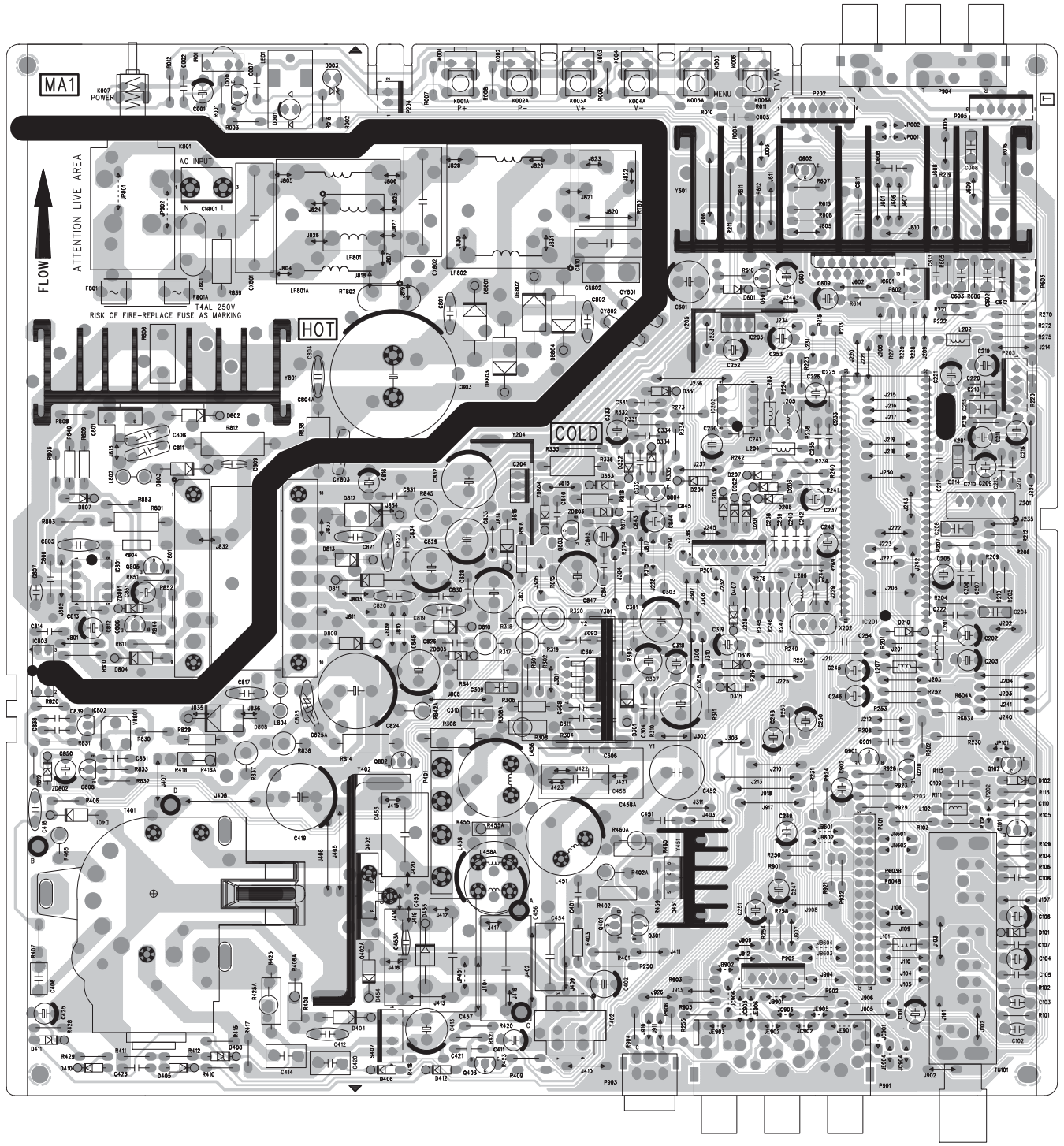


*	Q511	Q521	Q531	Q511A	Q521A	Q531A
14–21''	SC2482	SC2482	SC2482	——	——	——
29''	——	——	——	SC4544	SC4544	SC4544

Prepared by		
Checked by		
Released by		40–0NX56B–CR1

PCB Material
DS1108/EC207/CCP6400S
Thickness(MM)
1.6MM
Layer
SINGLESIDE
Copper Thickness
1OZ
Surface treatment
OSP
Solder slot(C-PAD)
Other



PCB Material	
Thickness(MM)	DS108/EC207/CC98400S
Layer	1.6MM
Copper Thickness	SINGLESIDE
Surface treatment	1OZ
Solder slot(C-PAD)	OSP
Other	

UOC-TOP-64 N1 series

Versatile signal processor for CRT TV applications

Rev. 0.11 — 25 January 2007 Product data sheet

1. General description

The UOC-TOP-64 series is a very flexible concept which offers attractive solutions for $1f_H$ TV receivers with CRTs. This new concept offers a complete range of products with the right price level to cover TV receivers from basic mono 14 inch sets up to the best featured large and/or wide screen AV-stereo TV sets. The UOC-TOP-64 concept can also be used as front-end for $2f_H$ and LCD TV receivers.

The UOC-TOP-64 concept is mounted in a SDIP64 package and is split up in the following ranges:

- AV-110 (AV-stereo) concept. It contains a video processor with many features and it has an analog audio control circuit with balance, treble, bass and loudness control. Two different micro processor are available for this concept, one with OSD and Closed Captioning or Teletext and Closed Captioning features (UOCTOP_1PTXT version), the other with (extended) OSD features (UOCTOP_OSD version). The block diagram is given in Figure 1.
- AV-90 concept. This concept is nearly identical to the AV-110 concept. The only difference that it does not contain an East-West and Scan Velocity Modulation (SVM) output. This concept is intended for 90× picture tubes.
- Mono-110 concept. The functional content of this concept is comparable with that of the AV 110 concept, however, it has just stereo input switch and no audio control circuit. The block diagram is given in Figure 1.
- Mono-90 concept. This concept is intended for 90× picture tubes. The circuit has an audio switch for mono signals but the mono inputs can also be used as a stereo input. In this range most of the video and audio processing features have been omitted. Also this concept can be supplied with one of the two micro processors (UOCTOP_1PTXT or UOCTOP_OSD version). The block diagram is given in Figure 2.

The most important features of the complete IC series are given in the following feature lists.

All packages are according to the ROHS legislation, which also means that these packages are lead-free. The ICs have supply voltages of 8V, 5V and 3.3V.

UOC-TOP-64 is supported by a comprehensive Global TV Software Development kit to enable easy programming and fast time-to-market (see also Section 20.4 “Licenses”).

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2. Features

2.1 Analog Video Processing

2.1.1 Overview of available features (AV-110/90 and Mono-110 concept)

- Multi-standard vision IF circuit with alignment-free PLL demodulator
- Internal (switchable) time-constant for the IF-AGC circuit
- Switchable group delay correction and sound trap (with switchable centre frequency) for the demodulated CVBS signal
- Separate Second Sound IF output or FM demodulator output without de-emphasis available, which can be used as input for an external BTSC decoder or as input for external sound band-pass filter for second language processing.
- Separate SSIF input available as input for the FM-PLL demodulator to demodulate FM-radio with an IF frequency of 10.7 MHz, or as input from an external sound band-pass filter for second language processing.
- AM demodulator without extra reference circuit
- The mono intercarrier sound circuit has a selective FM-PLL demodulator which can be switched to the different FM sound frequencies (4.5/5.5/6.0/6.5 MHz). The quality of this system is such that the external band-pass filters can be omitted.
- The FM-PLL demodulator can be set to centre frequencies of 4.72/5.74 MHz so that a second sound channel can be demodulated. In such an application it is necessary that an external bandpass filter is inserted.
- Audio switch circuit with 2 stereo inputs (1 stereo input can also be switched into two mono sound inputs) and a stereo output which can be used for the drive of for audio power amplifiers (with volume and tone-control) or as SCART/CINCH output. The second stereo input is only available via the combined C2/C3/C4/AUDIOIN5R pin for the right channel and via the combined CVBS4/Y4/AUDIOIN5L pin for the left channel.
- Video switch with 3 external CVBS inputs. All CVBS inputs can be used as Y-input for Y/C signals. However, only 1 Y/C source can be selected because the circuit has 1 chroma input. CVBS3/Y3 input available in combination with the G/Y-3 input pin.
- 1 CVBS output, this output can be used as monitor video output or as front-end video output or as independent selectable video output.
- Automatic Y/C signal detector.
- Integrated luminance delay line with adjustable delay time
- Only one reference (24.576 MHz) crystal required for the m-Controller, Teletext- and the color decoder
- Multi-standard color decoder with automatic search system and various “forced mode” possibilities
- Internal base-band delay line
- Indication of the Signal-to-Noise ratio of the incoming CVBS signal
- Linear RGB/YP_BP_R input.
- Scan Velocity Modulation output. The SVM circuit is active for all the incoming CVBS, Y/C and RGB/YP_BP_R signals. The SVM output is combined with the black current input of the black current stabilisation circuit. By means of a small application adaptation both functions can be operational in parallel.

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- Picture improvement features with peaking (with switchable centre frequency, depeaking, variable positive/negative peak ratio, variable pre-/overshoot ratio and video dependent coring), dynamic skin tone control, gamma control and blue- and black stretching. All features are available for CVBS, Y/C and RGB/YP_BP_R signals
- The effect of the various features can de demonstrated by means of a ‘split screen’ mode in which the features are activated in one half of the picture and switched off in the other half
- Switchable DC transfer ratio for the luminance signal
- Tint control for external RGB/YP_BP_R signals
- Contrast reduction possibility during mixed-mode of OSD and Text signals. Option to make a colored and in contrast reduced window.
- RGB control circuit with ‘Continuous Cathode Calibration’, white point and black level off-set adjustment so that the color temperature of the dark and the light parts of the screen can be chosen independently. When this ‘Continuous Cathode Calibration’ is not used, simple alignment of the cutoff level is possible.
- Adjustable ‘wide blanking’ of the RGB outputs
- Horizontal synchronization with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimized for DC-coupled vertical output stages
- Horizontal and vertical geometry processing with horizontal parallelogram and bow correction and horizontal and vertical zoom
- The IC can be used as front-end for Progressive Scan or LCD TV receivers
- Low-power start-up of the horizontal drive circuit

2.1.2 Features of the AV-110/90 concept which are not available in the Mono-110 concept

- Analog audio tone control circuit with treble, bass and loudness controls

2.1.3 Features of the AV-110 and Mono-110 concept which are not available in the AV-90 concept

- Horizontal geometry processing and Scan Velocity Modulation output

2.1.4 Differences in feature list for the MONO-90 concept compared with AV-110/90 and Mono-110 concept

- Audio switch circuit with 1 stereo input, which can also be switched into two mono sound inputs, a mono output for SCART/CINCH with the possibility to serve as front/monitor audio output.
- Stereo output (with volume and AVL) for audio power amplifiers. This stereo output can also be switched to one mono loudspeaker output and one fixed mono sound output.
- CVBS output, this output can only be used as monitor video output or as front-end video output.
- Only basic video processing. The remaining video features are peaking with coring, black stretching and gamma control.
- No horizontal geometry processing and Scan Velocity Modulation output.

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2.2 Micro-Controller

- 80C51 m-controller core standard instruction set and timing
- 0.9766 ms machine cycle
- maximum of 80 k x 8-bit late programmed ROM
- maximum of 3 k x 8-bit Auxiliary RAM
- I^2C byte level bus interface.
- Interrupt controller for individual enable/disable with two level priority
- Two 16-bit Timer/Counter registers
- One 24-bit Timer (16-bit timer with 8-bit Pre-scaler)
- 16-bit Data pointer
- WatchDog timer
- Auxiliary RAM page pointer
- Stand-by, Idle and Power Down modes
- Up to 13 general-purpose I/O pins
- 14 bits PWM for Voltage Synthesis Tuning
- 8-bit A/D converter with 4 multiplexed inputs
- 4 PWM (6-bits) outputs for analogue control functions

2.3 Data Capture (Teletext and Closed Caption devices)

- Text memory for 1 page
- Inventory of transmitted Teletext pages stored in the Transmitted Page Table (TPT) and Subtitle Page Table (SPT)
- Data Capture for US Closed Caption
- Data Capture for 525/625 line WST, VPS (PDC system A) and 625 line Wide Screen Signalling (WSS) bit decoding
- Automatic selection between 525 WST/625 WST
- Automatic selection between 625 WST/VPS on line 16 of VBI
- Real-time capture and decoding for WST Teletext in Hardware, to enable optimized m-processor throughput
- Automatic detection of FASTEXT transmission
- Real-time packet 26 engine in Hardware for processing accented, G2 and G3 characters
- Signal quality detector for video and WST/VPS data types
- Comprehensive teletext language coverage
- Vertical Blanking Interval (VBI) data capture of WST data

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2.4 Display

2.4.1 Features of the OSD-only devices

- Up to 4 character sets with 256 characters each (size 16 pixels x 18 lines)
- Enhanced OSD modes
- 50Hz/60Hz display timing modes
- Serial and Parallel Display Attributes
- Single/Double Width and Height for characters
- Scrolling of display region
- Variable flash rate controlled by software
- Enhanced display features including overlining, underlining and italics
- Soft colors using CLUT with 4096 color palette
- Global selectable matrix: (12/16)
- By attribute selectable: 1.5x characters (18/24)
- Globally selectable character spacing
- Fringing (Shadow) selectable from N-S-E-W direction
- Fringe color selectable
- Contrast reduction of defined area with option of coloration
- Programmable Cursor
- Special Graphics Characters with two planes, allowing four colors per character

2.4.2 Features of the Teletext and Closed Caption devices

- Four character sets
- Up to 576 characters with a size of 12 pixels x 16 lines are supported
- Teletext and Enhanced OSD modes
- 50Hz/60Hz display timing modes
- Serial and Parallel Display Attributes
- Scrolling of display region
- Variable flash rate controlled by software
- Soft colors using CLUT with 4096 color palette
- Global selectable matrix: (12)
- Features of level 1.5 WST and US Close Caption
- Single/Double/Quadruple Width and Height for characters
- 64 software redefinable On-Screen display characters
- G1 Mosaic graphics, Limited G3 Line drawing characters
- WST Character sets and Closed Caption Character set in single device
- Curtaining effect via software
- Fringing (Shadow) selectable from N-S-E-W direction
- Fringe color selectable
- Contrast reduction of defined area with option of coloration
- Programmable Cursor
- Special Graphics Characters with two planes, allowing four colors per character

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3. Quick reference data

Table 1: Quick reference data

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
Supply					
V_P	analogue supply voltage VSP	4.7	5.0	5.3	V
I_P	supply current (5.0 V)	–	160	–	mA
V_{DDA}	digital supply VSP / analogue supply periphery	3.0	3.3	3.6	V
I_{DDA}	supply current (3.3 V); Mono90 version	–	50	–	mA
I_{DDA}	supply current (3.3 V); AV110/90 and Mono110 versions	–	70	–	mA
V_{PAudio}[1]	audio supply voltage	4.7	8.0	8.4	V
I_{PAudio}[1]	supply current (5.0/8.0 V); mono-90 version	–	0.5	–	mA
I_{PAudio}	supply current (8.0 V); AV-110/90 and mono-110 version	–	10	–	mA
P_{tot}	total power dissipation	–	–	1.1	W
Input voltages					
$V_{iVIFrms)}$	video IF amplifier sensitivity (RMS value)	–	75	150	µV
$V_{iSSIF(rms)}$	sound IF amplifier sensitivity (RMS value)	–	1.0	–	mV
$V_{iAUDIO(rms)}$	external audio input (RMS value)	–	1.0	1.3	V
$V_{iCVBS(p-p)}$	external CVBS/Y input (peak-to-peak value)	–	1.0	1.4	V
$V_{iCHROMA(p-p)}$	external chroma input voltage (burst amplitude) (peak-to-peak value)	–	0.3	1.0	V
$V_{iRGB(p-p)}$	RGB inputs (peak-to-peak value)	–	0.7	0.8	V
$V_{iY(p-p)}$	luminance input signal (peak-to-peak value)	–	1.0	–	V
$V_{iPB(p-p)}$	P_B input signal (peak-to-peak value)[2]	–	0.7	–	V
$V_{iPR(p-p)}$	P_R input signal (peak-to-peak value)[2]	–	0.7	–	V
Output signals					
$V_{o(IFVO)(p-p)}$	demodulated CVBS output (peak-to-peak value)	–	2.0	–	V
$V_{o(QSSO)(rms)}$	sound IF intercarrier output (RMS value)	–	100	–	mV
$V_{o(AMOUT)(rms)}$	demodulated AM sound output (RMS value)	–	250	–	mV
$V_{o(AUDIO)(rms)}$[1]	non-controlled audio output signals (RMS value)	1.0	–	–	V
$V_{o(CVBSO)(p-p)}$	selected CVBS output (peak-to-peak value)	–	2.0	–	V
$I_{o(AGCOUT)}$	tuner AGC output current range	0	–	1	mA
$V_{oRGB(p-p)}$	RGB output signal amplitudes (peak-to-peak value)	–	1.2	–	V
I_{oHOUT}	horizontal output current	10	–	–	mA
I_{oVERT}	vertical output current (peak-to-peak value)	–	1	–	mA
I_{oEWD}	EW drive output current	–	–	1.2	mA

[1] The supply voltage for the analogue audio part of the mono-90 version can be 5V or 8V. For a supply voltage of 5V the maximum signal amplitudes at in and outputs are $1V_{rms}$. For a supply voltage of 8V the maximum output signal amplitude is 2 V_{rms}. The AV-110/90 and Mono-110 versions need a supply voltage of 8 V.

[2] The YP_BP_R input signal amplitudes are based on a color bar signal with 100% saturation.

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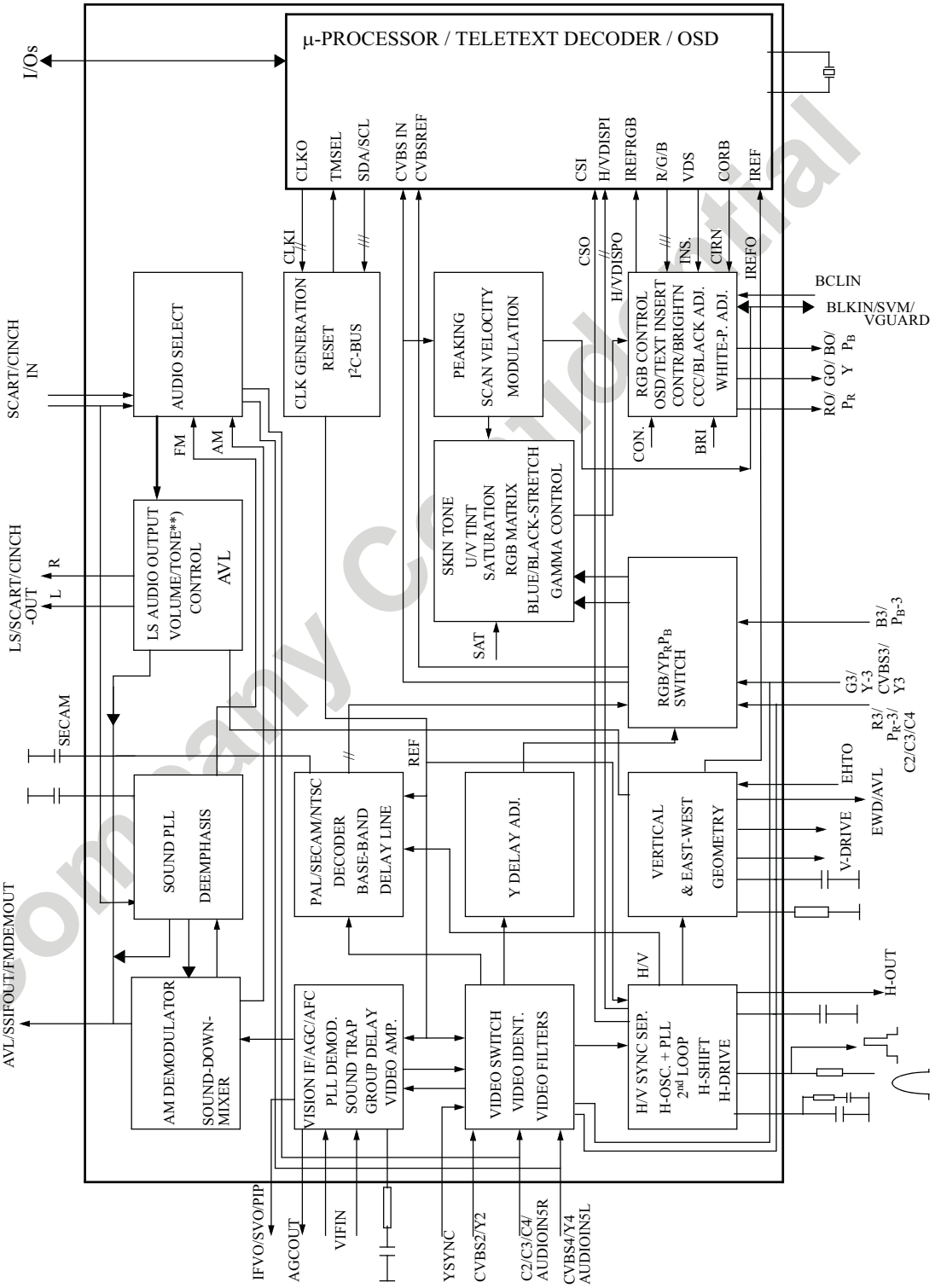
5. Block diagram



**) The mono-110 version has only volume control and no tone control functions

Fig 1. Block diagram of the “AV-110/90” and “MONO-110” TV processor

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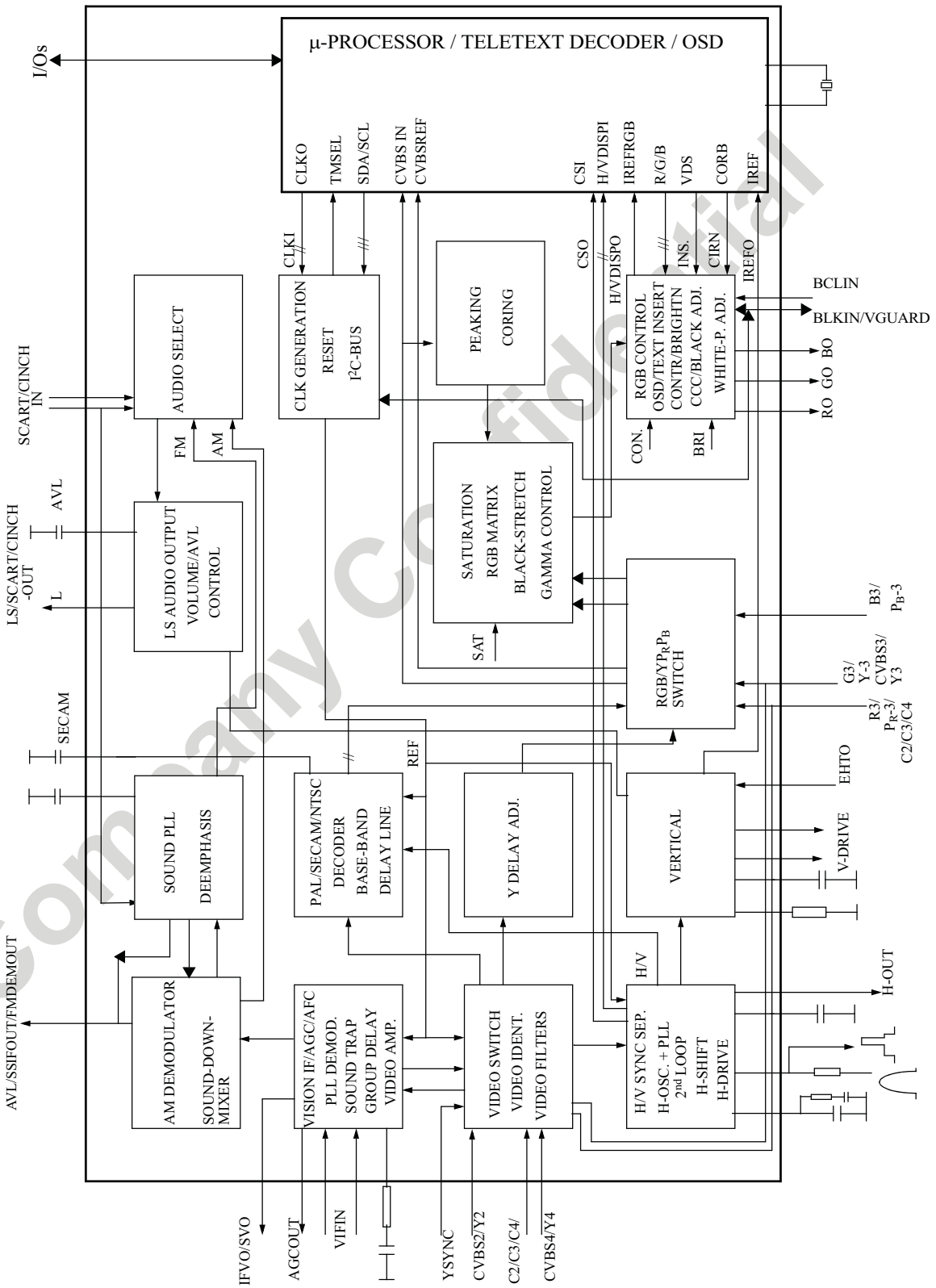

Fig 2. Block diagram of the “MONO-90” TV processor

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6. Pinning information

Table 6: Pinning information

SYMBOL	SDIP64			DESCRIPTION
	AV-110 Mono-110	AV-90	Mono-90	
IFVO/SVO/PIP [3]	1	1	–	IF video output / selected CVBS output / PIP output
IFVO/SVO [3]	–	–	1	IF video output / selected CVBS output
VP2	2	2	2	2nd supply voltage TV processor (+5 V)
VCC8V	3	3	3	8 Volt supply for audio switches
PLLIF	4	4	4	IF-PLL loop filter
GND2	5	5	5	ground 2 for TV processor
DECSDEM	6	6	6	decoupling sound demodulator
AVL/SSIFOUT/SNDDEMOUT[2]	7	7	7	AVL / Second sound IF output / sound demodulator output
EHTO	8	8	8	EHT/overvoltage protection input
AGCOUT	9	9	9	tuner AGC output
IREF	10	10	10	reference current input
VSC	11	11	11	vertical sawtooth capacitor
VIFIN2	12	12	12	IF input 2
VIFIN1	13	13	13	IF input 1
VDRA	14	14	14	vertical drive A output
VDRB	15	15	15	vertical drive B output
EWD/AVL	16	–	–	East-West drive output / AVL capacitor
AVL	–	16	16	AVL capacitor
DECBG	17	17	17	bandgap decoupling
SECPLL	18	18	18	SECAM PLL decoupling
GND1	19	19	19	ground 1 for TV-processor
PH1LF	20	20	20	phase-1 filter
PH2LF	21	21	21	phase-2 filter
VP1	22	22	22	1st supply voltage TV-processor (+5 V)
DECDIG	23	23	23	decoupling digital supply
XTALOUT	24	24	24	crystal oscillator output
XTALIN	25	25	25	crystal oscillator input
P1.5	26	26	26	port 1.5
P3.3/ADC3/PWM3	27	27	27	port 3.3 or ADC3 input or PWM3 output
P3.2/ADC2/PWM2	28	28	28	port 3.2 or ADC2 input or PWM2 output
P3.1/ADC1/PWM1	29	29	29	port 3.1 or ADC1 input or PWM1 output
P3.0/ADC0/PWM0	30	30	30	port 3.0 or ADC0 input or PWM0 output
P2.1/PWM0	31	31	31	port 2.1 or PWM0 output
P2.0/TPWM	32	32	32	port 2.0 or Tuning PWM output
VDDP(3.3V)	33	33	33	supply to periphery (3.3V)
P1.7/SDA	34	34	34	port 1.7 or I2C-bus data line
P1.6/SCL	35	35	35	port 1.6 or I2C-bus clock line
P1.3/T1	36	36	36	port 1.3 or Counter/Timer 1 input
P1.1/T0	37	37	37	port 1.1 or Counter/Timer 0 input
P1.0/INT1	38	38	38	port 1.0 or external interrupt 1
INT0/P0.5	39	39	39	external interrupt 0 or port 0.5 (4 mA current sinking capability for direct drive of LEDs)
VDDC(3.3V)	40	40	40	supply

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Table 6: Pinning information

SYMBOL	SDIP64			DESCRIPTION
	AV-110 Mono-110	AV-90	Mono-90	
GND5	41	41	41	ground
VPE	42	42	42	OTP Programming Voltage
VDDA1(3.3V)	43	43	43	supply voltage
BO/PBOUT	44	44	–	Blue output / P_B output
BO	–	–	44	Blue output
GO/YOUT	45	45	–	Green output / Y output
GO	–	–	45	Green output
RO/PROUT	46	46	–	Red output / P_R output
RO	–	–	46	Red output
BLKIN/VGUARD/SVM [1][6]	47	–	–	black current input / vertical guard / scan velocity modulation output
BLKIN/VGUARD [1][6]	–	47	47	black current input / vertical guard
BCLIN	48	48	48	beam current limiter input
B3/P_B3	49	49	49	3rd B input / P_B input
G3/Y3/CVBS3/Y3 [1]	50	50	50	3rd G input / Y input / CVBS input / Y input
R3/P_R3/C2/C3/C4 [1]	51	51	51	3rd R input / P_R input / C2/3/4 input
YOUT	52	52	52	Y-output (for YUV interface)
YSYNC	53	53	53	Y-input for sync separator
VP3	54	54	54	supply voltage (5 V)
GND3	55	55	55	ground connection
HOUT	56	56	56	horizontal output
FBISO/SANDCA	57	57	57	flyback input/sandcastle output
AUDOUTSM2/LSR	58	58	58	audio output for audio power amplifier (right signal) or fixed audio output for mono applications
AUDOUTLSM1/LSL	59	59	59	audio output for audio power amplifier (left signal) or speaker output for mono applications
C2/C3/C4/AUDIOIN5R [1]	60	60	-	chroma-2/3/4 input / audio 5 right input
C2/C3/C4	–	–	60	chroma-2/3/4 input
AUDIOIN3/IN1R [5]	61	61	61	audio 3 input / right stereo input
CVBS2/Y2	62	62	62	CVBS2/Y2 input
AUDIOIN2/IN1L/SSIF [4][5]	63	63	63	audio 2 input / left stereo input / sound IF input
CVBS4/Y4/AUDIOIN5L [1]	64	64	–	CVBS4/Y4 input / audio 5 left input
CVBS4/Y4	–	–	64	CVBS4/Y4 input

[1] The function of these pins is dependent on some I^2C-bus control bits. More details are given in Table 7.

[2] The function of this pin is selected by means of the CMB2-0 bits

[3] The function of this pin is selected by means of the SVO1-0 bits

[4] The SSIF input is selected by means of the SSIFM bit

[5] The choice between two mono inputs or one stereo input is realized by means of the bits SAS3-0

[6] The black current input, vertical guard input and SVM output (AV-110/90 and Mono-110 versions) have been combined on this pin. For a reliable operation of the protection system and the black current stabilization system or SVM system, the end of the vertical guard protection pulse during normal operation should not overlap the measuring pulses. Therefore this pulse must end before line 14.

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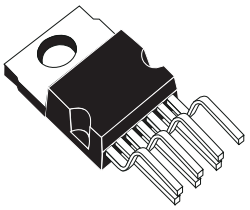
STV8172A

Vertical Deflection Booster for 3-A_{PP} TV/Monitor Applications with 75-V Flyback Generator

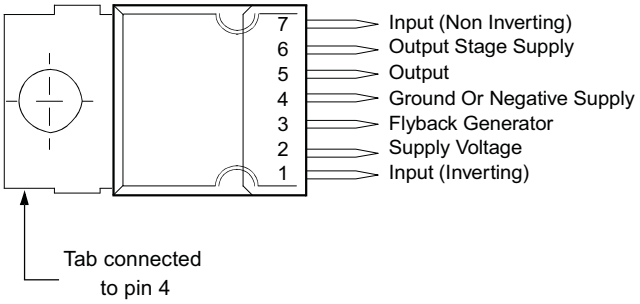
PRODUCT PREVIEW

Main Features

- **Power Amplifier**
- **Flyback Generator**
- **Stand-by Control**
- **Output Current up to 3 App**
- **Thermal Protection**



HEPTAWATT
(Plastic Package)
ORDER CODE: STV8172A



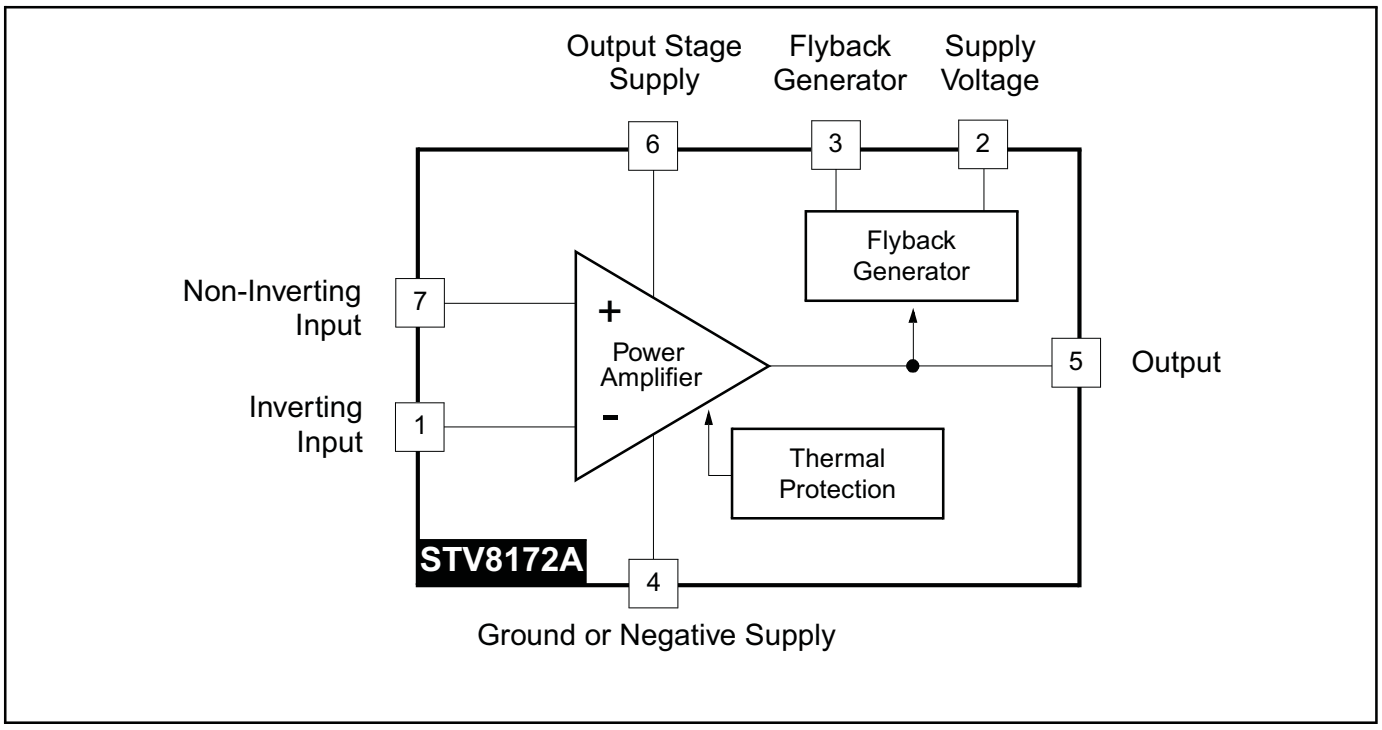
Description

The STV8172A is a vertical deflection booster designed for TV and monitor applications.

This device, supplied with up to 35 V, provides up to 2.5 App output current to drive the vertical deflection yoke.

The internal flyback generator delivers flyback voltages up to 75 V.

In double-supply applications, a stand-by state will be reached by stopping the (+) supply alone.



This is preliminary information on a new product now in development. Details are subject to change without notice.

1 Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
Voltage			
V_S	Supply Voltage (pin 2) - Note 1 and Note 2	40	V
V_5, V_6	Flyback Peak Voltage - Note 2	70	V
V_3	Voltage at Pin 3 - Note 2, Note 3 and Note 6	-0.4 to (V_S + 3)	V
V_1, V_7	Amplifier Input Voltage - Note 2, Note 6 and Note 7	- 0.4 to (V_S + 2) or +40	V
Current			
I_0 (1)	Output Peak Current at f = 50 to 200 Hz, t ≤ 10µs - Note 4	±5	A
I_0 (2)	Output Peak Current non-repetitive - Note 5	±2	A
I_3 Sink	Sink Current, t<1ms - Note 3	2	A
I_3 Source	Source Current, t < 1ms	2	A
I_3	Flyback pulse current at f=50 to 200 Hz, t≤10µs - Note 4	±5	A
ESD Susceptibility			
ESD1	Human body model (100 pF discharged through 1.5 kΩ)	2	kV
ESD2	EIAJ Standard (200 pF discharged through 0 Ω)	300	V
Temperature			
T_s	Storage Temperature	-40 to 150	°C
T_j	Junction Temperature	+150	°C

Note:1. Usually the flyback voltage is slightly more than 2 x V_S. This must be taken into consideration when setting V_S.

2. *Versus pin 4*
3. *V3 is higher than V_S during the first half of the flyback pulse.*
4. *Such repetitive output peak currents are usually observed just before and after the flyback pulse.*
5. *This non-repetitive output peak current can be observed, for example, during the Switch-On/Switch-Off phases. This peak current is acceptable providing the SOA is respected (Figure 8 and Figure 9).*
6. *All pins have a reverse diode towards pin 4, these diodes should never be forward-biased.*
7. *Input voltages must not exceed the lower value of either V_S + 2 or 40 volts.*

2 Thermal Data

Symbol	Parameter	Value	Unit
R_{thJC}	Junction-to-Case Thermal Resistance	3	°C/W
T_T	Temperature for Thermal Shutdown	150	°C
T_J	Recommended Max. Junction Temperature	120	°C

3 Electrical Characteristics

(V_S = 34 V, T_{AMB} = 25°C, unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	Fig.
Supply							
V_S	Operating Supply Voltage Range (V_2-V_4)	Note 8	10		35	V	
I_2	Pin 2 Quiescent Current	I_3 = 0, I_5 = 0		5	20	mA	1
I_6	Pin 6 Quiescent Current	I_3 = 0, I_5 = 0, V_6 =35v	8	19	50	mA	1
Input							
I_1	Input Bias Current	V_1 = 1 V, V_7 = 2.2 V		- 0.6	-1.5	µA	1
I_7	Input Bias Current	V_1 = 2.2 V, V_7 = 1 V		- 0.6	-1.5	µA	
V_{IR}	Operating Input Voltage Range		0		V_S - 2	V	
V_{I0}	Offset Voltage			2		mV	
$\Delta V_{I0}/dt$	Offset Drift versus Temperature			10		µV/°C	
Output							
I_0	Operating Peak Output Current	0^o<Tcase<125^oC			±1.5	A	
V_{5L}	Output Saturation Voltage to pin 4	I_5 = 1.5 A		1	1.7	V	3
V_{5H}	Output Saturation Voltage to pin 6	I_5 = -1.5 A		1.8	2.3	V	2
Stand-by							
V_{5STBY}	Output Voltage in Stand-by	V_1 = V_7 = V_S = 0 See Note 9	V_S - 2			V	
Miscellaneous							
G	Voltage Gain		80			dB	
V_{D5-6}	Diode Forward Voltage Between pins 5-6	I_5 = 1.5 A		1.8	2.3	V	
V_{D3-2}	Diode Forward Voltage between pins 3-2	I_3 = 1.5 A		1.6	2.2	V	
V_{3SL}	Saturation Voltage on pin 3	I_3 = 20 mA		0.4	1	V	3
V_{3SH}	Saturation Voltage to pin 2 (2nd part of flyback)	I_3 = -1.5 A		2.1	2.8	V	

8. *In normal applications, the peak flyback voltage is slightly greater than 2 x (V_S - V_4). Therefore, (V_S - V_4) = 35 V is not allowed without special circuitry.*
9. *Refer to Figure 4, Stand-by condition.*

Figure 1: Measurement of I_1, I_2 and I_6

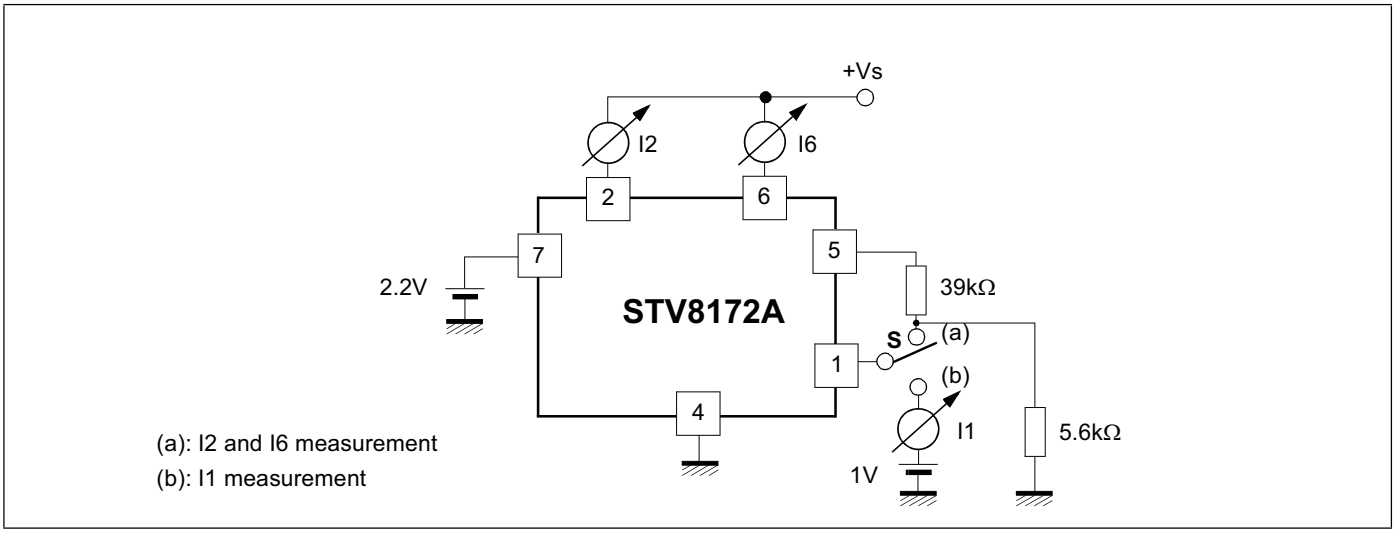


Figure 2: Measurement of V_{5H}

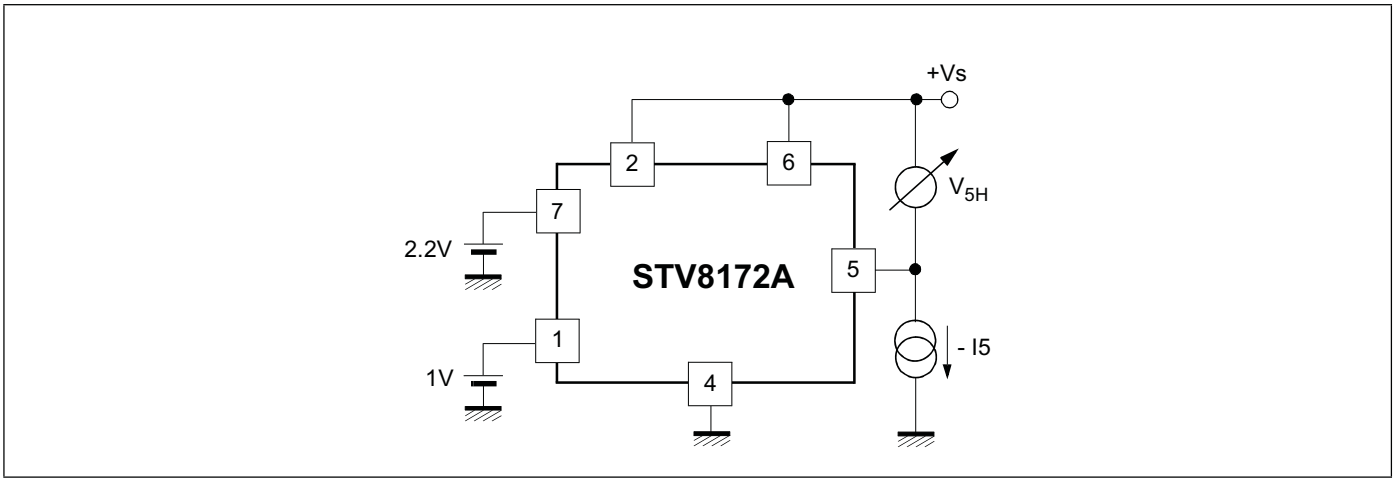
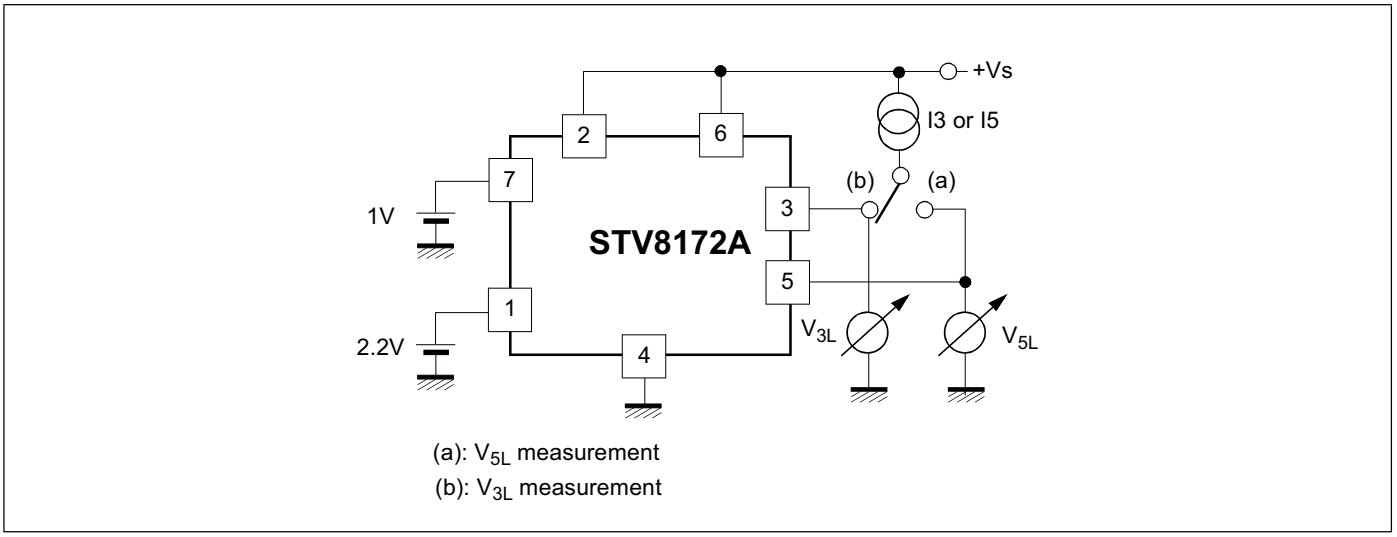


Figure 3: Measurement of V_{3L} and V_{5L}



4 Application Hints

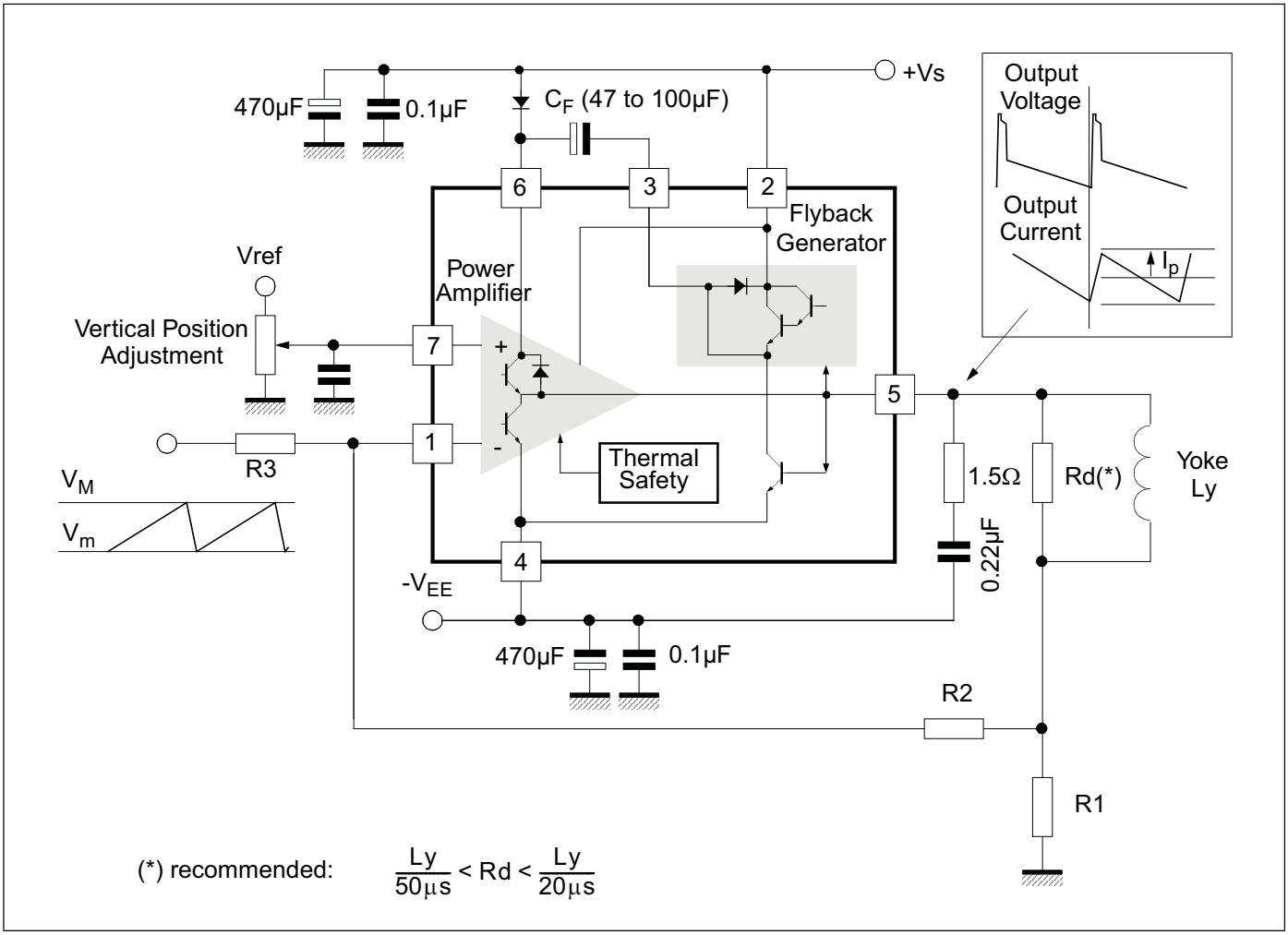
The yoke can be coupled either in AC or DC.

4.1 DC-coupled Application

When DC coupled (see Figure 4), the display vertical position can be adjusted with input bias. On the other hand, 2 supply sources (V_S and $-V_{EE}$) are required.

A Stand-by state will be reached by switching OFF the positive supply alone. In this state, where both inputs are the same voltage as pin 2 or higher, the output will sink negligible current from the deviation coil.

Figure 4: DC-coupled Application



4.1.1 Application Hints

For calculations, treat the IC as an op-amp, where the feedback loop maintains $V_1 = V_7$.

4.1.1.1 Centering

Display will be centered (null mean current in yoke) when voltage on pin 7 is (R_1 is negligible):

$$V_7 = \frac{V_M + V_m}{2} \times \left(\frac{R_2}{R_2 + R_3} \right)$$

4.1.1.2 Peak Current

$$I_P = \frac{(V_M - V_m)}{2} \times \frac{R_2}{R_1 x R_3}$$

Example: for V_m = 2 V, V_M = 5 V and I_P = 1 A

Choose R_1 in the1 Ω range, for instance R_1=1 Ω

From equation of peak current: $\frac{R_2}{R_3} = \frac{2 \times I_P \times R_1}{V_M - V_m} = \frac{2}{3}$

Then choose R_2 or R_3. For instance, if R_2 = 10 kΩ, then R_3 = 15 kΩ

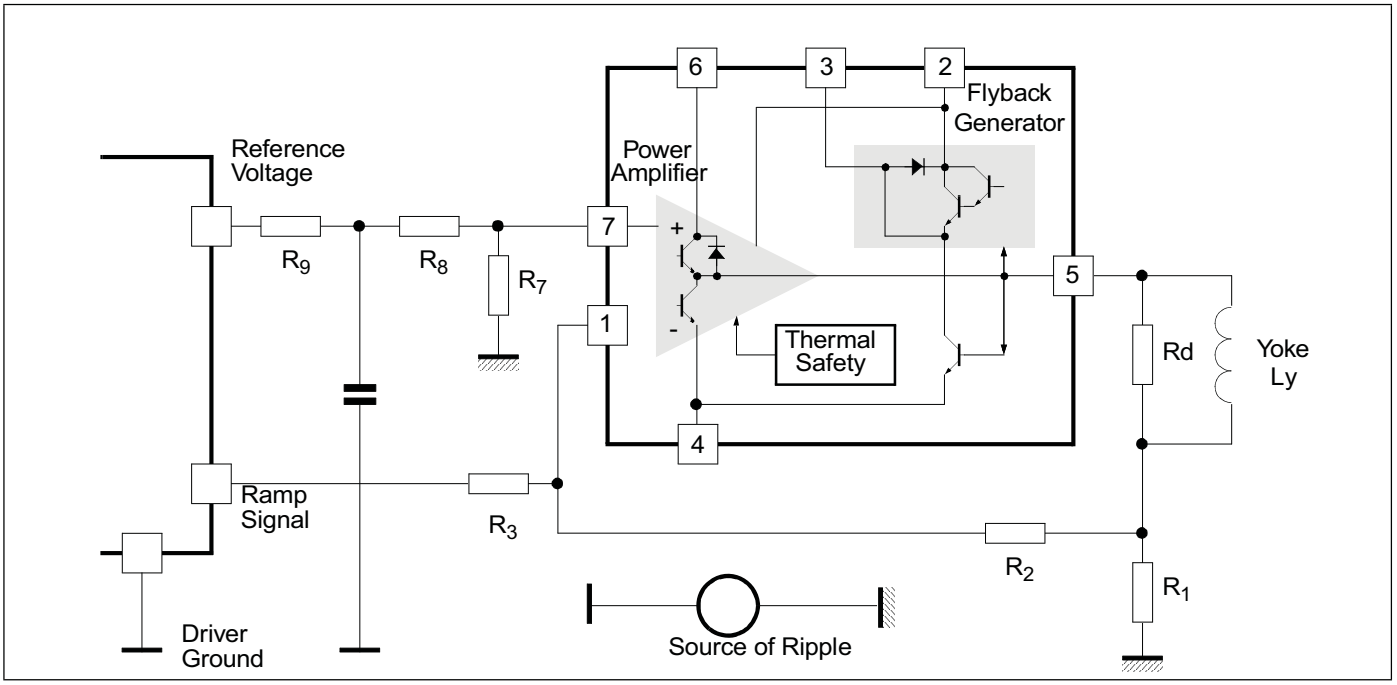
Finally, the bias voltage on pin 7 should be:

$$V_7 = \frac{V_M + V_m}{2} \times \frac{1}{1 + \frac{R_3}{R_2}} = \frac{7}{2} \times \frac{1}{2.5} = 1.4V$$

4.1.2 Ripple Rejection

When both ramp signal and bias are provided by the same driver IC, you can gain natural rejection of any ripple caused by a voltage drop in the ground (see Figure 5), if you manage to apply the same fraction of ripple voltage to both booster inputs. For that purpose, arrange an intermediate point in the bias resistor bridge, such that (R_8 / R_7) = (R_3 / R_2), and connect the bias filtering capacitor between the intermediate point and the local driver ground. Of course, R_7 should be connected to the booster reference point, which is the ground side of R_1.

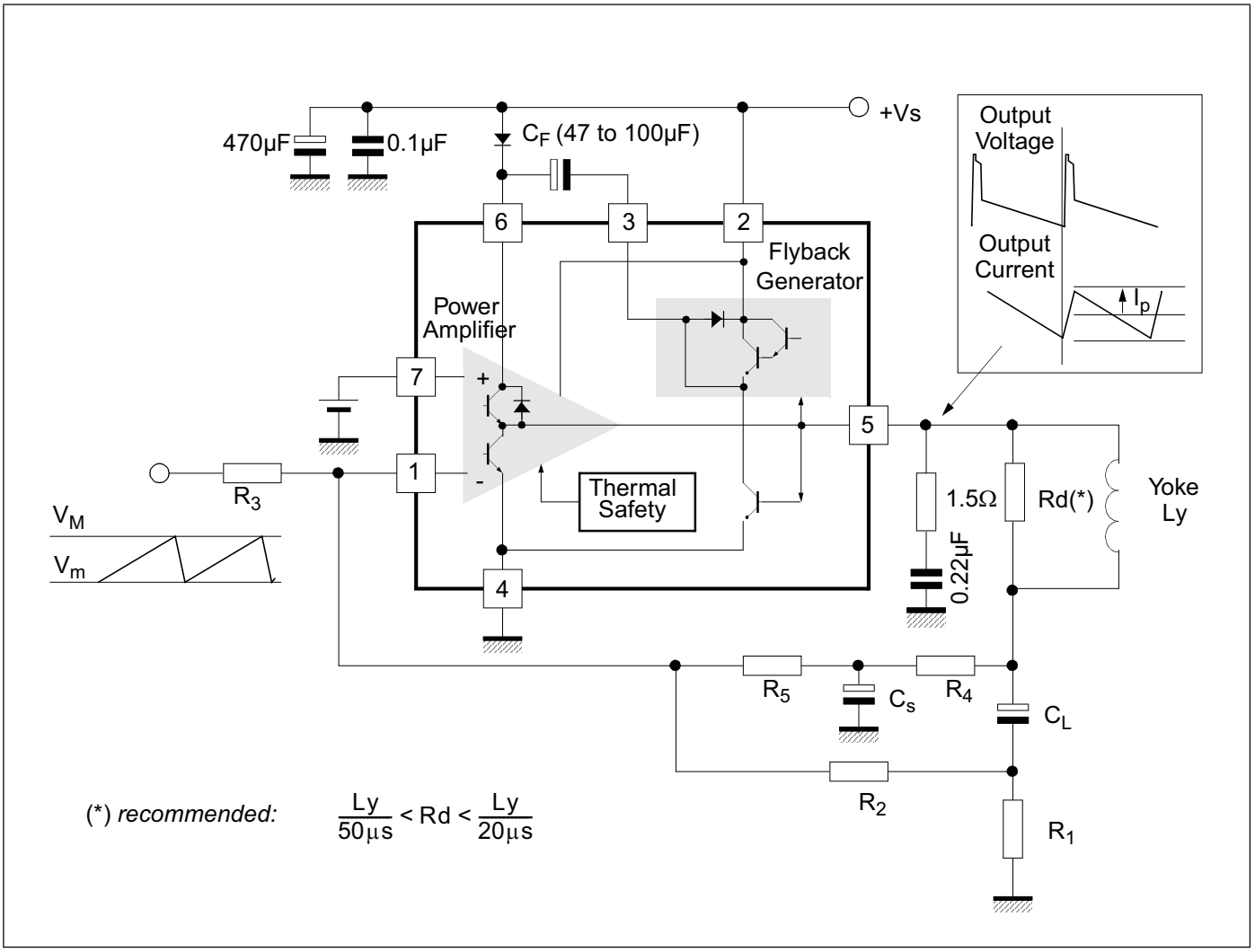
Figure 5: Ripple Rejection



4.2 AC-Coupled Applications

In AC-coupled applications (See Figure 6), only one supply (V_S) is needed. The vertical position of the scanning cannot be adjusted with input bias (for that purpose, usually some current is injected or sunk with a resistor in the low side of the yoke).

Figure 6: AC-coupled Application



4.2.1 Application Hints

Gain is defined as in the previous case:

$$I_p = \frac{V_M - V_m}{2} \times \frac{R_2}{R_1 \times R_3}$$

Choose R_1 then either R_2 or R_3. For good output centering, V_7 must fulfill the following equation:

$$\frac{\frac{V_S}{2} - V_7}{R_4 + R_5} = \frac{V_7 - \frac{V_M + V_m}{2}}{R_3} + \frac{V_7}{R_2}$$

or

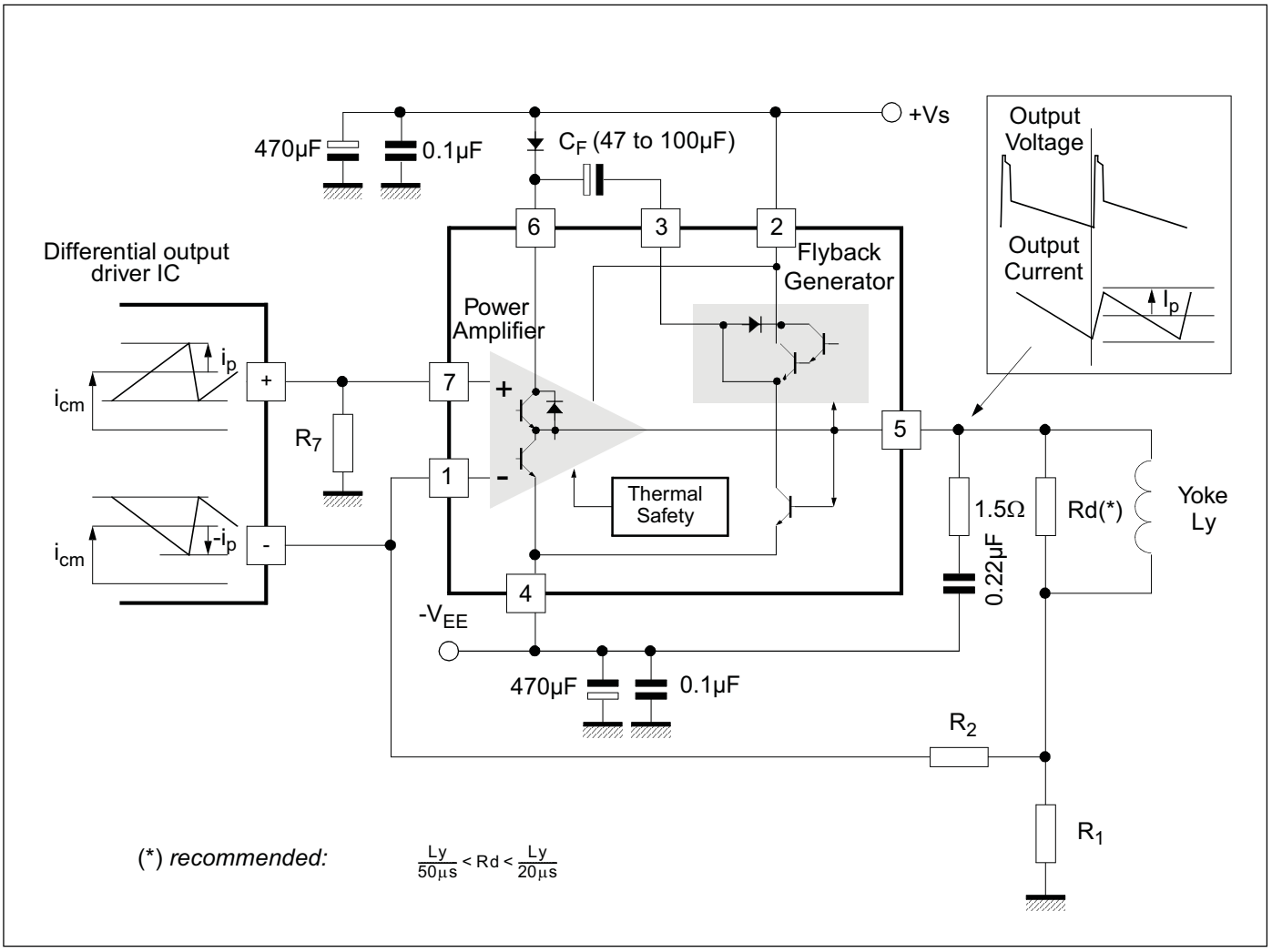
$$V_7 \times \left(\frac{1}{R_3} + \frac{1}{R_2} + \frac{1}{R_4 + R_5}\right) = \left(\frac{V_S}{2(R_4 + R_5)} + \frac{V_M + V_m}{2 \times R_3}\right)$$

C_S performs an integration of the parabolic signal on C_L, therefore the amount of S correction is set by the combination of C_L and C_s.

4.3 Application with Differential-output Drivers

Certain driver ICs provide the ramp signal in differential form, as two current sources i_+ and i_- with opposite variations.

Figure 7: Using a Differential-output Driver



Let us set some definitions:

- i_{cm} is the common-mode current: $i_{cm} = \frac{1}{2}(i_+ + i_-)$
- at peak of signal, $i_+ = i_{cm} + i_p$ and $i_- = i_{cm} - i_p$, therefore the peak differential signal is $i_p - (-i_p) = 2\,i_p$, and the peak-peak differential signal, $4i_p$.

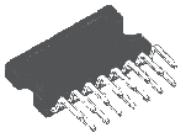
The application is described in Figure 7 with DC yoke coupling. The calculations still rely on the fact that V_1 remains equal to V_7.

TDA7266SA

7W+7W DUAL BRIDGE AMPLIFIER

- WIDE SUPPLY VOLTAGE RANGE (3.5-18V)
- MINIMUM EXTERNAL COMPONENTS
  - NO SWR CAPACITOR
  - NO BOOTSTRAP
  - NO BOUCHEROT CELLS
  - INTERNALLY FIXED GAIN
- STAND-BY & MUTE FUNCTIONS
- SHORT CIRCUIT PROTECTION
- THERMAL OVERLOAD PROTECTION

TECHNOLOGY BI20II



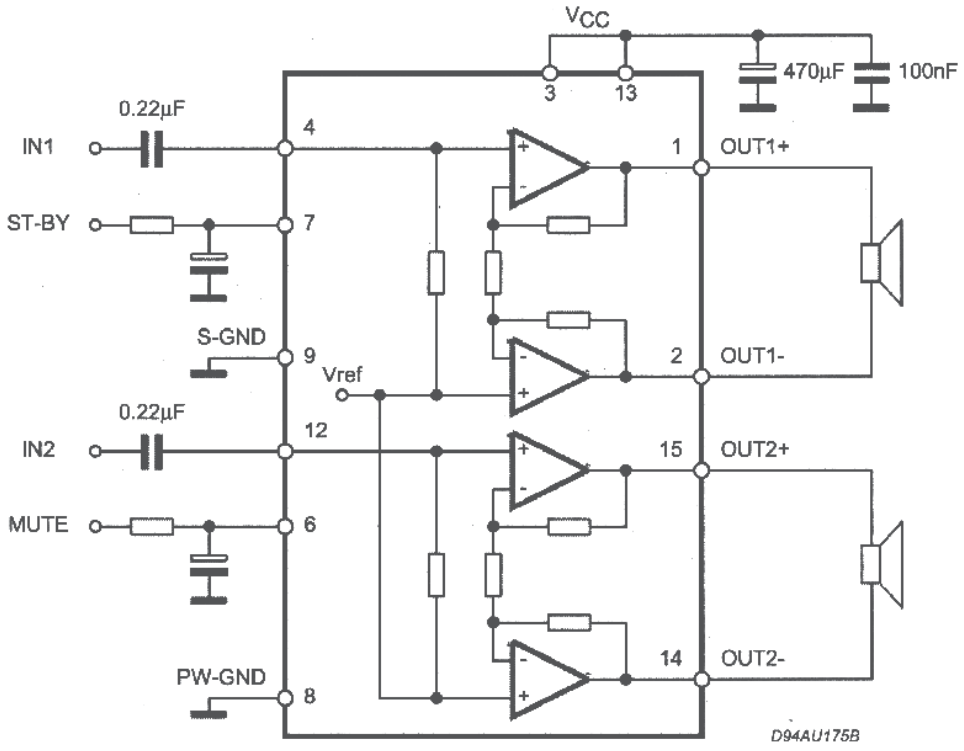
CLIPWATT15
ORDERING NUMBER: TDA7266SA

DESCRIPTION

The TDA7266SA is a dual bridge amplifier specially designed for LCD Monitor, PC Motherboard, TV and Portable Radio applications.

Pin to pin compatible with: TDA7266S, TDA7266, TDA7266M, TDA7266MA, TDA7266B, TDA7297SA & TDA7297.

BLOCK AND APPLICATION DIAGRAM



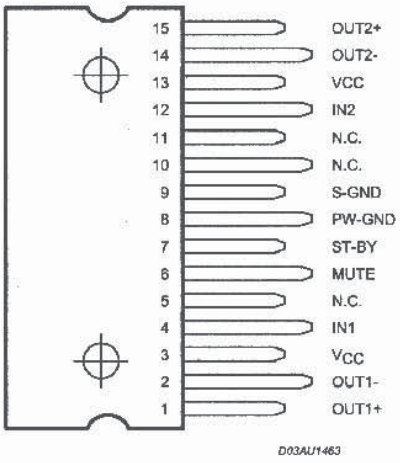
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_s	Supply Voltage	20	V
I_O	Output Peak Current (internally limited)	2	A
T_{op}	Operating Temperature	0 to 70	°C
T_{stg}, T_j	Storage and Junction Temperature	-40 to 150	°C

THERMAL DATA

Symbol	Parameter	Value	Unit
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	3	°C/W

PIN CONNECTION (Top view)



ELECTRICAL CHARACTERISTCS

(V_{CC} = 11V, R_L = 8Ω, f = 1KHz, T_{amb} = 25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_{CC}	Supply Range		3	11	18	V
I_q	Total Quiescent Current			50	65	mA
V_{OS}	Output Offset Voltage				120	mV
P_O	Output Power	THD 10%	6.3	6		W
THD	Total Harmonic Distortion	P_O = 1W		0.05	0.2	%
		P_O = 0.1W to 2W f = 100Hz to 15KHz			1	%
SVR	Supply Voltage Rejection	f = 100Hz, VR =0.5V	40	56		dB
CT	Crosstalk		46	60		dB
A_{MUTE}	Mute Attenuation		60	80		dB
T_w	Thermal Threshold			150		°C
G_V	Closed Loop Voltage Gain		25	26	27	dB
ΔG_V	Voltage Gain Matching				0.5	dB

ELECTRICAL CHARACTERISTCS (continued)
(V_{CC} = 11V, R_L = 8Ω, f = 1KHz, T_{amb} = 25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
R_i	Input Resistance		25	30		KΩ
VT_{MUTE}	Mute Threshold	for V_{CC} > 6.4V; Vo = -30dB	2.3	2.9	4.1	V
		for V_{CC} < 6.4V; Vo = -30dB	$V_{CC}/2$ -1	$V_{CC}/2$ -075	$V_{CC}/2$ -0.5	V
VT_{ST-BY}	St-by Threshold		0.8	1.3	1.8	V
I_{ST-BY}	St-by Current V6 = GND				100	µA
e_N	Total Output Voltage	A Curve; f = 20Hzto 20KHz		150		µV

APPLICATION SUGGESTION

STAND-BY AND MUTE FUNCTIONS

(A) Microprocessor Application

In order to avoid annoying "Pop-Noise" during Turn-On/Off transients, it is necessary to guarantee the right St-by and mute signals sequence. It is quite simple to obtain this function using a microprocessor (Fig. 1 and 2).
At first St-by signal (from µP) goes high and the voltage across the St-by terminal (Pin 7) starts to increase exponentially. The external RC network is intended to turn-on slowly the biasing circuits of the amplifier, this to avoid "POP" and "CLICK" on the outputs.
When this voltage reaches the St-by threshold level, the amplifier is switched-on and the external capacitors in series to the input terminals (C3, C53) start to charge.
It's necessary to mantain the mute signal low until the capacitors are fully charged, this to avoid that the device goes in play mode causing a loud "Pop Noise" on the speakers.
A delay of 100-200ms between St-by and mute signals is suitable for a proper operation.

Figure 1. Microprocessor Application

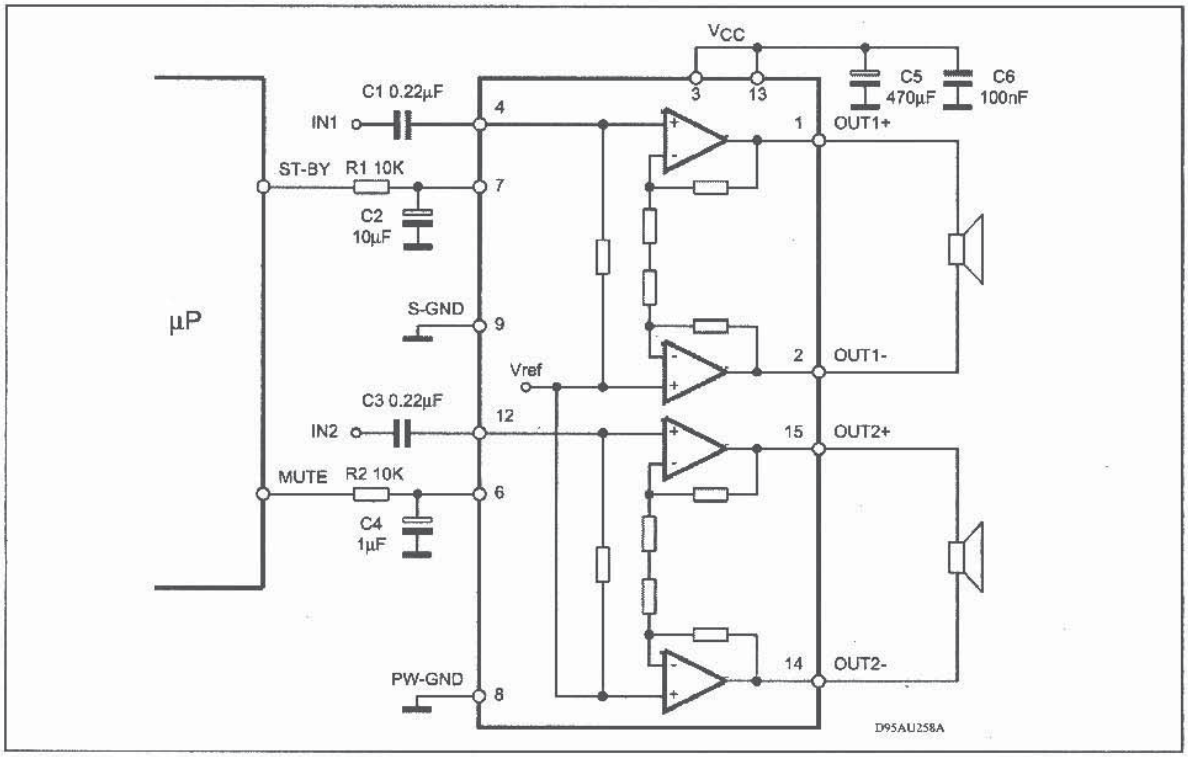


Figure 1 Fuse Blown

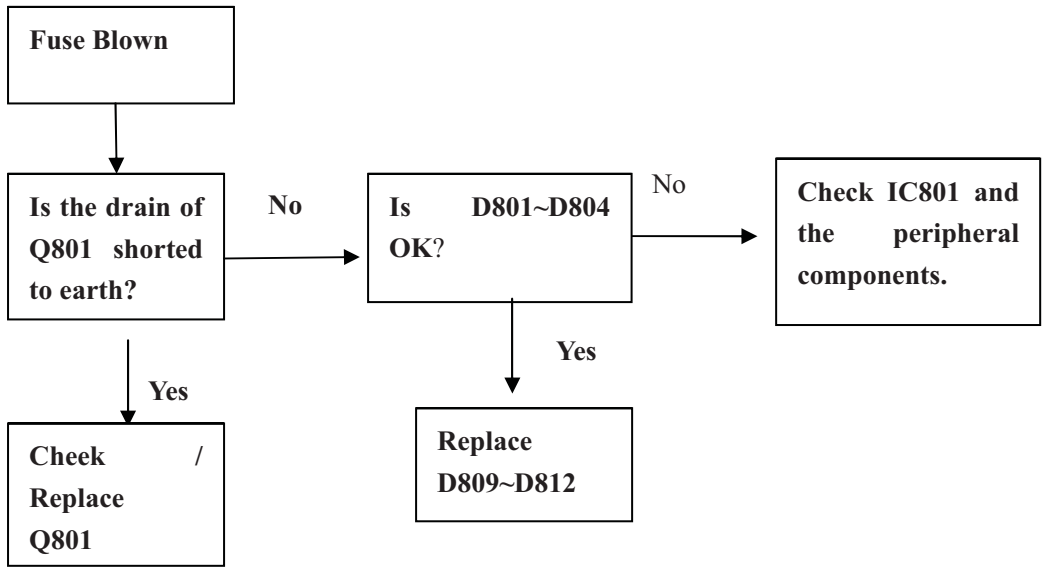


Figure2 No Raster Abnormal +B

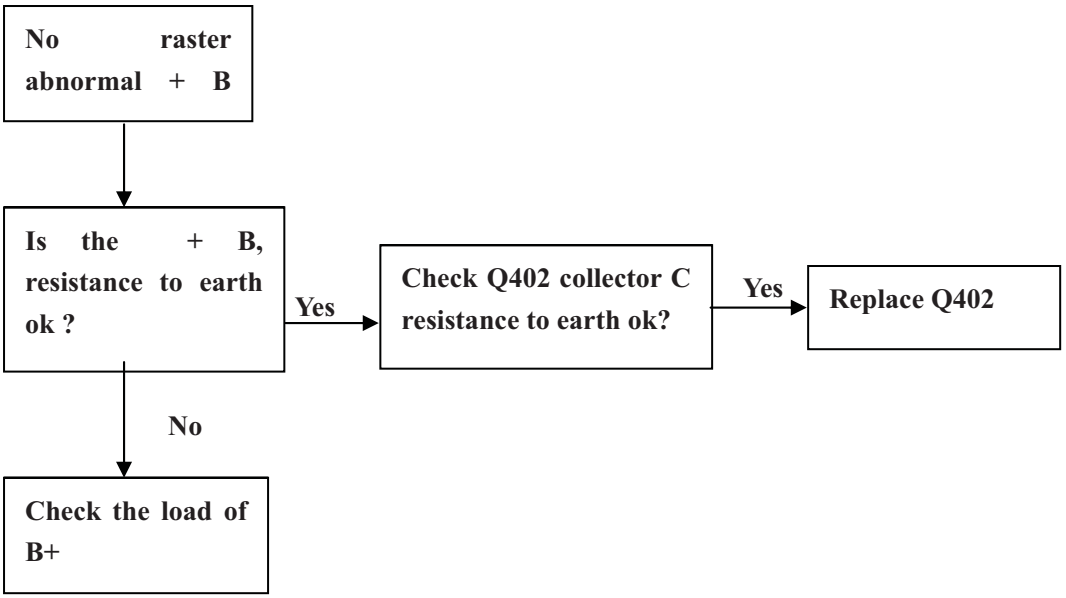

No raster abnormal + B
Is the + B, resistance to earth ok ?
Yes
Check Q402 collector C resistance to earth ok?
Yes
Replace Q402
No
Check the load of B+

Figure3 No Raster, +B OK

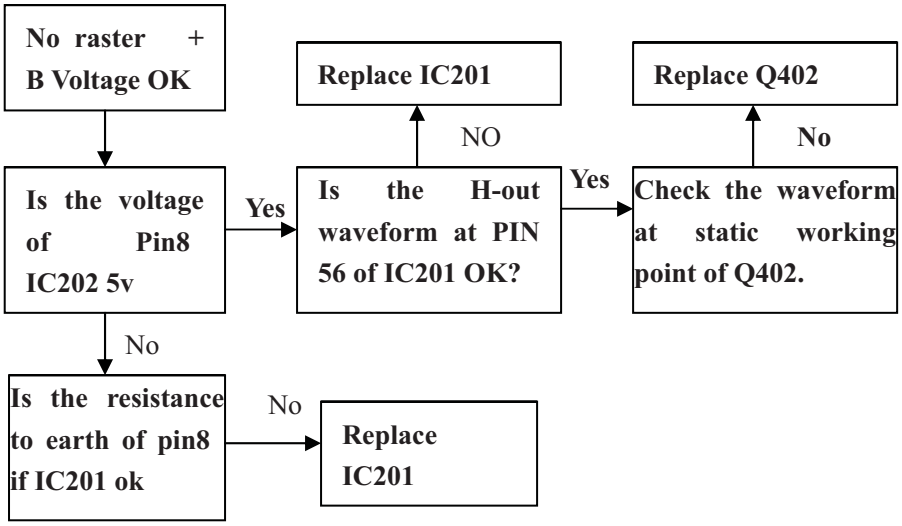


Figure 4 No Sound

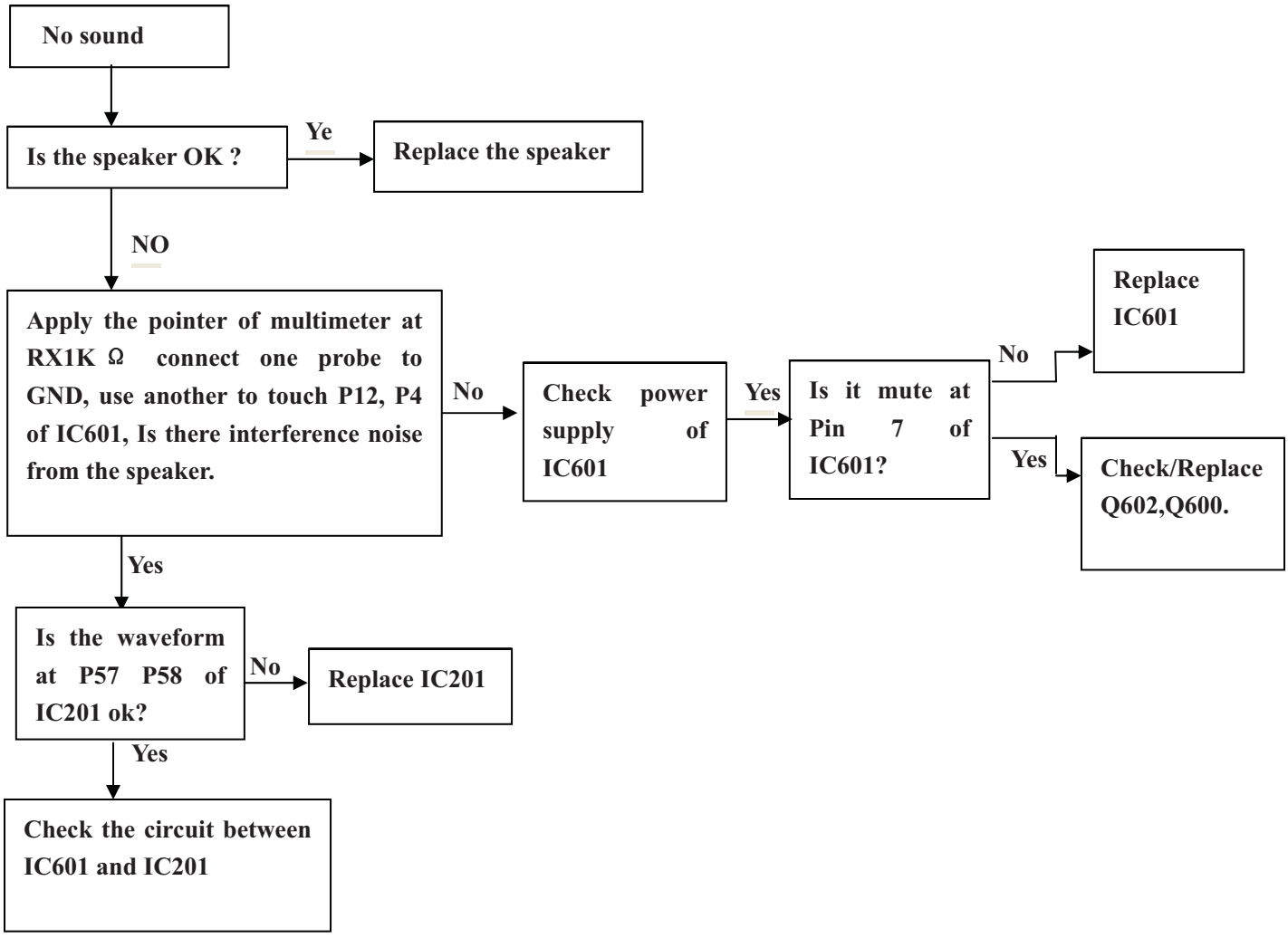

No sound
Is the speaker OK ?
Ye
Replace the speaker
NO
Apply the pointer of multimeter at RX1K Ω connect one probe to GND, use another to touch P12, P4 of IC601, Is there interference noise from the speaker.
No
Check power supply of IC601
Yes
Is it mute at Pin 7 of IC601?
No
Replace IC601
Yes
Check/Replace Q602,Q600.
Yes
Is the waveform at P57 P58 of IC201 ok?
No
Replace IC201
Yes
Check the circuit between IC601 and IC201

Figure 5 No Vertical Scanning

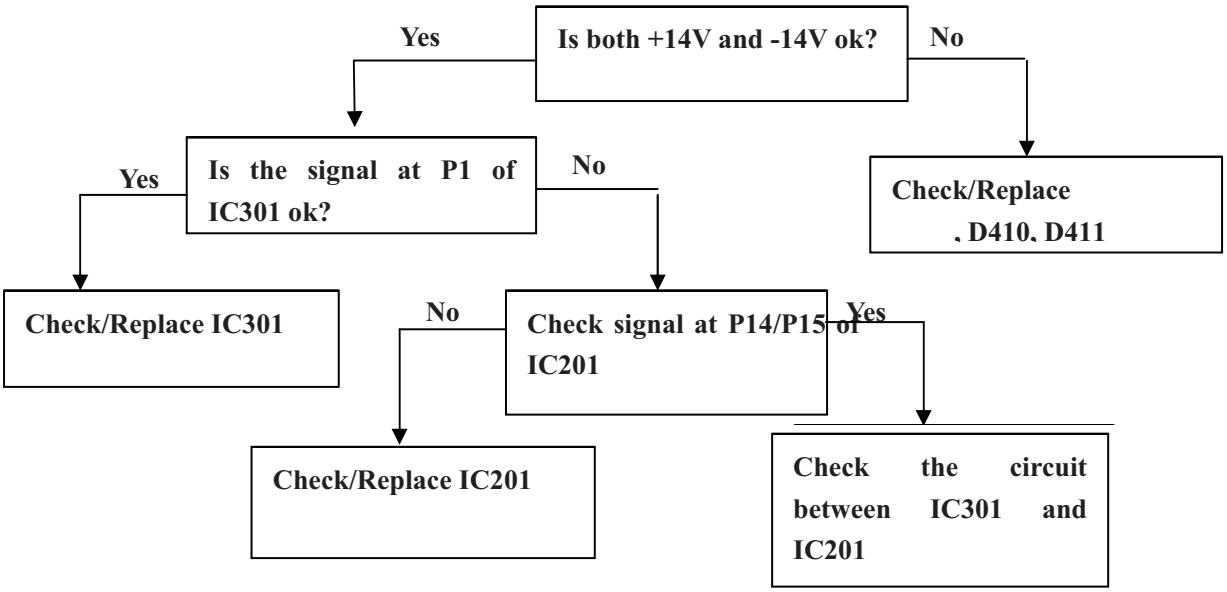
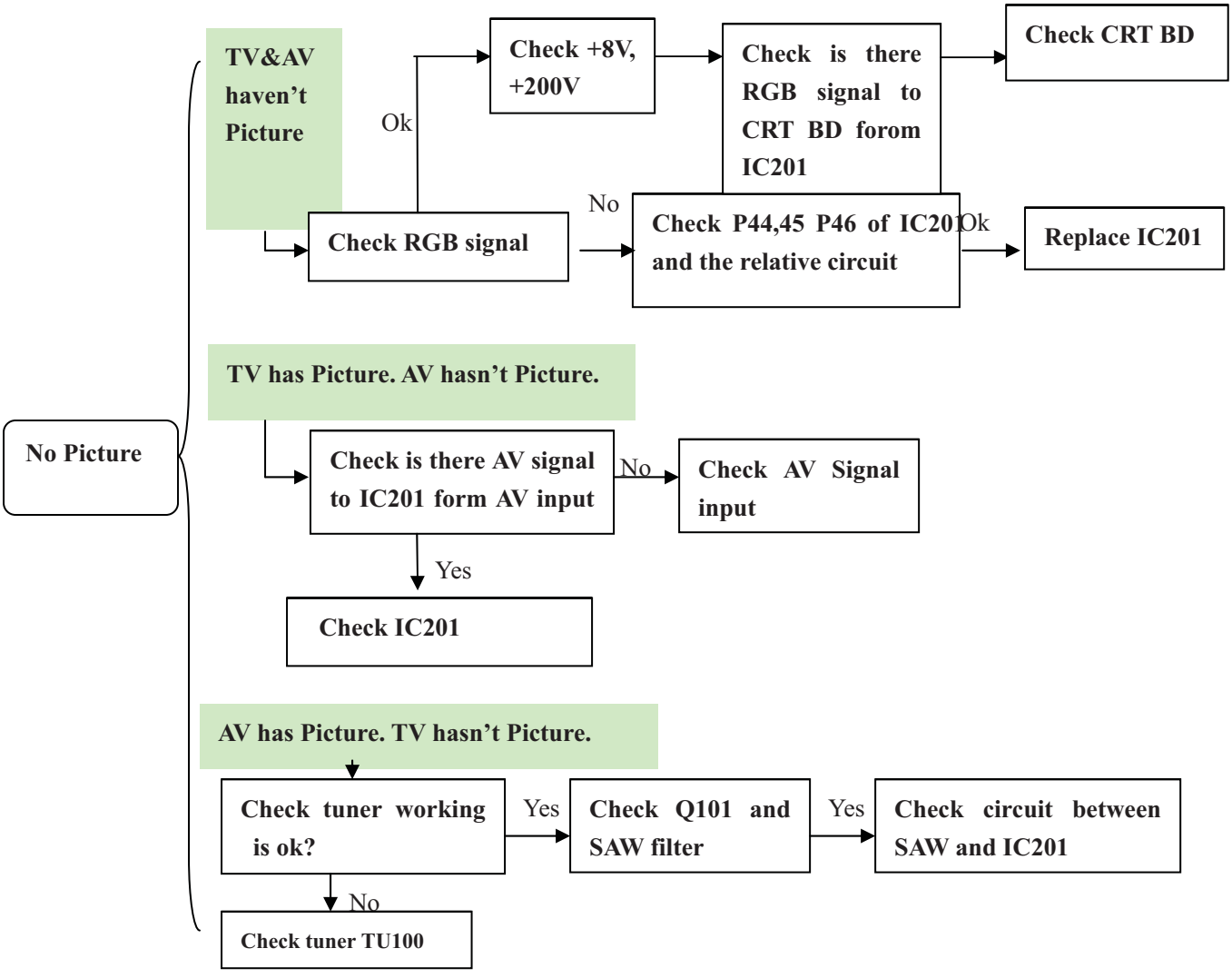
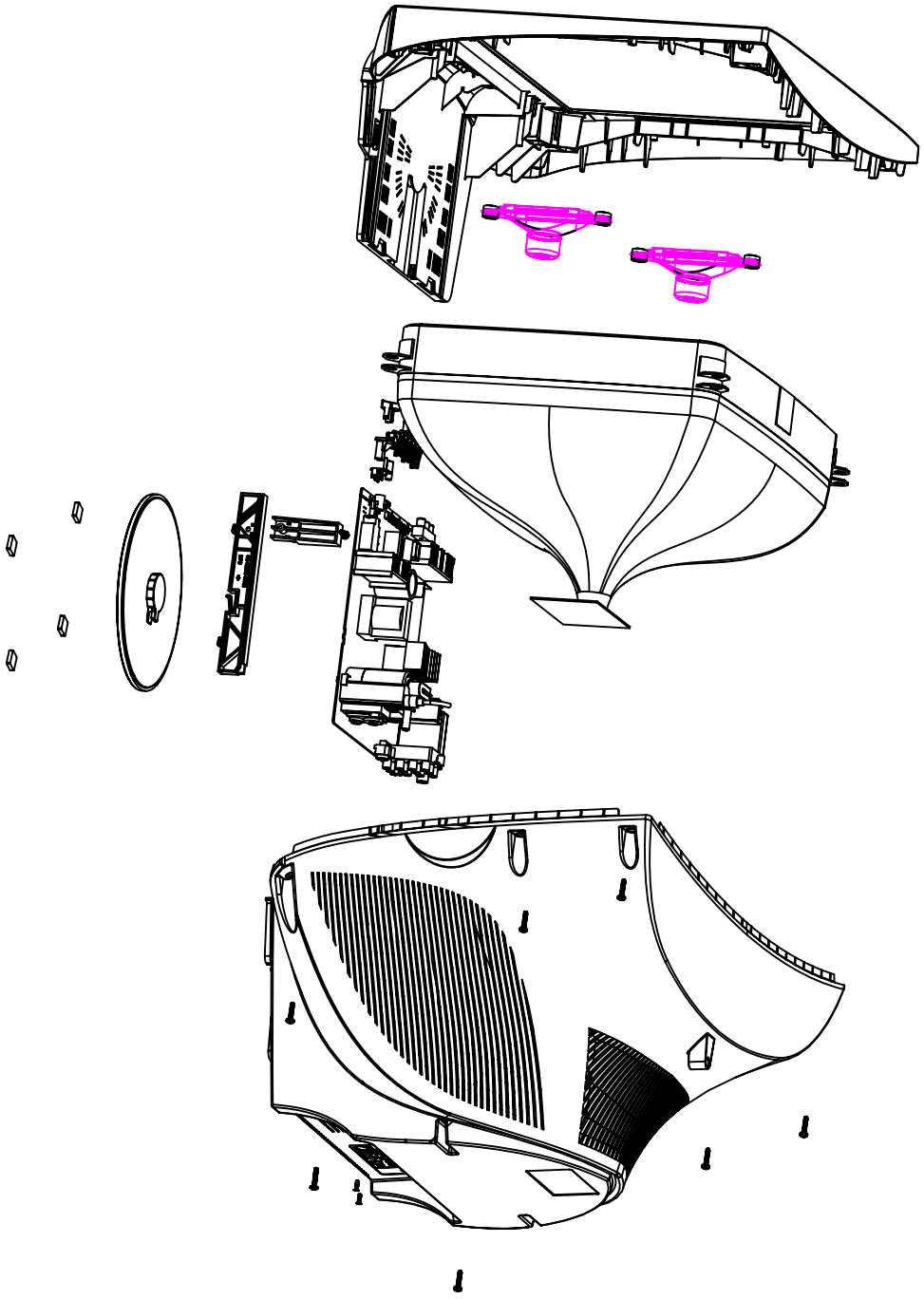


Figure 6 No Picture





No.	Part Number	Part Name	QTY	Remark
1	8A1NJ	BACK COVER ASSY	1	
2	8A1NK	BASE ASSY	1	

TCL Mechanical Department

Part Number: 8A1NJ
Part Name: BACK COVER ASSY
Base Model: 8A1NK
Designer: [redacted]
Checker:
Approver:
Project: [redacted]
Issued:
Issued:
Date:

parent	child	description	BOM text
03-21K9NAK-IN12X	T8-21RFLM-TS7AK	ASS'Y - MATCH TUBEKIT	
T8-21RFLM-TS7AK	T8-21RFLM-FTS7AK	ASS'Y - MATCH TUBE (F.CAB)KIT	
T8-21RFLM-FTS7AK	44-21RFLM-TS7A	CRT 21INCH RF INDIA A51EMW032X0A1 R=Y	
T8-21RFLM-FTS7AK	46-26514H-04XG	HS 4P A/B 500/13 RBGW TJC1-4Y	FOR DY TO M.BD P401
T8-21RFLM-TS7AK	T8-21RFLM-MTS7AK	ASS'Y - MATCH TUBE (MAIN BD)KIT	
T8-21RFLM-MTS7AK	27-AHQ223-JSX	CAP. M.PP 0.022 UF 400V +/-5%	C454
T8-21RFLM-MTS7AK	36-WID801-XX1	TCL36-WID801-XX1= COIL WIDTH 800 UH R=N	L451
T8-21RFLM-MTS7AK	18-CB0563-JNX	RES. C.F. 56K OHM 1/6W +/-5%	R459
T8-21RFLM-MTS7AK	18-CE0221-JNX	TCL18-CE0221-JNX= RES. C.F. 220 OHM 1/2W	R306
T8-21RFLM-MTS7AK	27-PBC222-J0X	CAP. P.E 0.0022UF 63V +/-5%	C406
T8-21RFLM-MTS7AK	18-DB0472-FNX	RES. M.F. 4.7K OHM 1/6W +/-1%	R833
T8-21RFLM-MTS7AK	41-WJ0055-B00	WIREBAREJUMPER5.5MM	R420
T8-21RFLM-MTS7AK	18-FF0122-JSX	RMOF 1W +-5% 1.2KΩ	R455A
T8-21RFLM-MTS7AK	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	J816
T8-21RFLM-MTS7AK	36-LIN270-XX1	COIL LINEARITY 27 UH	L458
T8-21RFLM-MTS7AK	37-NR0004-CAA7A	FBT BSC25-0233T NX56E BSC25-0233T R=N	T401
T8-21RFLM-MTS7AK	27-AHR334-JSX	CAP. M.PP 0.33 UF 400V +/-55	C456
T8-21RFLM-MTS7AK	18-RG0478-JSX	RESISTOR 线绕电阻 0.47OHM +/-5% 2W KN2W/	R317
T8-21RFLM-MTS7AK	18-RG0478-JSX	RESISTOR 线绕电阻 0.47OHM +/-5% 2W KN2W/	R318
T8-21RFLM-MTS7AK	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	R319
T8-21RFLM-MTS7AK	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	R320
T8-21RFLM-MTS7AK	27-ALQ562-J0X	CAP. M.PP 0.0056UF 1.6KV +/-5%	C453
T8-21RFLM-MTS7AK	27-ALR153-J0X	CAP. M.PP 15 NF 1.6KV +/-5%	C457
T8-21RFLM-MTS7AK	18-FG0479-JSX	RMOF 4.7OHM +/-5% 2W R=Y	R425A
T8-21RFLM-MTS7AK	18-CB0512-JNX	TCL18-CB0512-JNX= RES. C.F. 5.1K OHM 1/6	R416
T8-21RFLM-MTS7AK	18-FF0220-JSX	RES.M.O.F 22 OHM 1W +/-5%	R402A
T8-21RFLM-MTS7AK	26-AIC270-JZX	CC 27PF 500V Z	C418
T8-21RFLM-MTS7AK	18-FG0109-JSX	RMOF 1OHM +/-5% 2W R=Y	R308A
T8-21RFLM-TS7AK	T8-NX56AK-CR4	ASS'Y - CRT BDEQU	
T8-NX56AK-CR4	11-0BF422-0BX	TRANSISTOR BF422 (NPN) 126	Q522
T8-NX56AK-CR4	11-0BF422-0BX	TRANSISTOR BF422 (NPN) 126	Q512
T8-NX56AK-CR4	11-0BF422-0BX	TRANSISTOR BF422 (NPN) 126	Q532
T8-NX56AK-CR4	11-0BF423-0BX	TRANSISTOR BF423 (PNP) 126	Q513
T8-NX56AK-CR4	11-0BF423-0BX	TRANSISTOR BF423 (PNP) 126	Q523
T8-NX56AK-CR4	11-0BF423-0BX	TRANSISTOR BF423 (PNP) 126	Q533
T8-NX56AK-CR4	11-SC2482-0BX	TRANSISTOR 2SC2482	Q511
T8-NX56AK-CR4	11-SC2482-0BX	TRANSISTOR 2SC2482	Q521
T8-NX56AK-CR4	11-SC2482-0BX	TRANSISTOR 2SC2482	Q531
T8-NX56AK-CR4	18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	R512
T8-NX56AK-CR4	18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	R522
T8-NX56AK-CR4	18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	R532
T8-NX56AK-CR4	18-CB0271-JNX	RES. C.F. 270 OHM 1/6W +/-5%	R533
T8-NX56AK-CR4	18-CB0271-JNX	RES. C.F. 270 OHM 1/6W +/-5%	R523
T8-NX56AK-CR4	18-CB0271-JNX	RES. C.F. 270 OHM 1/6W +/-5%	R513
T8-NX56AK-CR4	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	R511
T8-NX56AK-CR4	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	R521
T8-NX56AK-CR4	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	R531
T8-NX56AK-CR4	18-CD0102-JNX	RES. C.F. 1K OHM 1/4W +/-5%	R541
T8-NX56AK-CR4	18-CD0471-JNX	RES. C.F. 470 OHM 1/4W +/-5%	R538
T8-NX56AK-CR4	18-CD0471-JNX	RES. C.F. 470 OHM 1/4W +/-5%	R536
T8-NX56AK-CR4	18-CD0471-JNX	RES. C.F. 470 OHM 1/4W +/-5%	R528
T8-NX56AK-CR4	18-CD0471-JNX	RES. C.F. 470 OHM 1/4W +/-5%	R526
T8-NX56AK-CR4	18-CD0471-JNX	RES. C.F. 470 OHM 1/4W +/-5%	R518
T8-NX56AK-CR4	18-CD0471-JNX	RES. C.F. 470 OHM 1/4W +/-5%	R516
T8-NX56AK-CR4	18-CE0752-JNX	RES.C.C 1/2W 7.5K OHM +/-5%	R515B
T8-NX56AK-CR4	18-CE0752-JNX	RES.C.C 1/2W 7.5K OHM +/-5%	R515
T8-NX56AK-CR4	18-CE0752-JNX	RES.C.C 1/2W 7.5K OHM +/-5%	R525
T8-NX56AK-CR4	18-CE0752-JNX	RES.C.C 1/2W 7.5K OHM +/-5%	R535B
T8-NX56AK-CR4	18-CE0752-JNX	RES.C.C 1/2W 7.5K OHM +/-5%	R535
T8-NX56AK-CR4	18-CE0752-JNX	RES.C.C 1/2W 7.5K OHM +/-5%	R525B

T8-NX56AK-CR4	18-CE0332-JNX	RES. C.F. 3.3K OHM 1/2W +/-5%	R539
T8-NX56AK-CR4	18-CE0332-JNX	RES. C.F. 3.3K OHM 1/2W +/-5%	R529
T8-NX56AK-CR4	18-CE0332-JNX	RES. C.F. 3.3K OHM 1/2W +/-5%	R519
T8-NX56AK-CR4	26-AMM102-KRX	CAP.CER 1NOF 2KVV -	C505
T8-NX56AK-CR4	26-EBP391-JCS	CAP. CER 390PF 50V +/-5%	C511
T8-NX56AK-CR4	26-EBP391-JCS	CAP. CER 390PF 50V +/-5%	C531
T8-NX56AK-CR4	26-EBP391-JCS	CAP. CER 390PF 50V +/-5%	C521
T8-NX56AK-CR4	26-EBP561-JCS	CAP. CEP 560PF 50V +/-5%	C541
T8-NX56AK-CR4	41-WJ0075-B00	WIREBAREJUMPER7.5MM	L501
T8-NX56AK-CR4	40-0NX56B-CRG1XG	TV PCB CR BD R=Y	
T8-NX56AK-CR4	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JP503
T8-NX56AK-CR4	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JP502
T8-NX56AK-CR4	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JP501
T8-NX56AK-CR4	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J505
T8-NX56AK-CR4	41-WJ0065-B00	1 R=N	D511
T8-NX56AK-CR4	41-WJ0065-B00	1 R=N	D521
T8-NX56AK-CR4	41-WJ0065-B00	1 R=N	D531
T8-NX56AK-CR4	41-WJ0090-B00	WIREBAREJUMPER9MM	J502
T8-NX56AK-CR4	41-WJ0100-B00	WIREBAREJUMPER10MM	J503
T8-NX56AK-CR4	46-10967W-01XG	SMD PIN BASE *1 TJC1-1A	P503
T8-NX56AK-CR4	46-33079W-06XG	PIN BASE *6 TJC3-6A	P501
T8-NX56AK-CR4	46-35179W-04XG	PIN BASE TJC3-4A	P502
T8-NX56AK-CR4	47-CRT022-NX0G	CRT SOCKET GZS10-2-DD2 (DQ5)	S501A
T8-NX56AK-CR4	18-CD0474-JNX	RES. C.F. 470K OHM 1/4W +/-5%	R506
03-21K9NAK-IN12X	T8-21K9AK-FC10	ASS'Y - FRONT CABINETASY	
T8-21K9AK-FC10	41-GND021-LX0T	BEAIDED GROUND WIRE 770MM AL-MG R=Y	
T8-21K9AK-FC10	46-CT057T-02K01G	WIRE CONNECT 570MM 2 TJC3 PH 2.5MM UL246	P602 TO R SPK
T8-21K9AK-FC10	46-CT048T-03K01G	WIRE CONNECT 480MM 3 TJC3 PH 2.5MM UL246	P603 TO L SPK
T8-21K9AK-FC10	59-130460-00X	RUBBER PAD (25MMX7MM)	STICK ON FRONT CAB(FOOTING)
T8-21K9AK-FC10	67-X12668-0E0	SPRING CRT 6MMX40MMX0.5MM	
T8-21K9AK-FC10	54-314740-0X0	CRT FIBRE SHEET (22MMX22MMX0.8MM)	MTG CRT & F.CAB
T8-21K9AK-FC10	54-205140-000	SPACER CRT MOUNTING T=2MM	MTG CRT & F.CAB
T8-21K9AK-FC10	67-X24283-0E0	SPING POWER KNOB	
T8-21K9AK-FC10	54-114000-00X	TV RAW FELT PAPER 150MMX19MMX0.3MM BK 01	
T8-21K9AK-FC10	63-S40120-BT4G	MACHINE SCREW	MTG SPK & F.CAB
T8-21K9AK-FC10	62-454920-0CL	TV RAW HOLDER POWER -- 00 00 R=N	
T8-21K9AK-FC10	63-Z60300-AB4G	S/T SCREW HA 6X30	MTG CRT & F.CAB
T8-21K9AK-FC10	57-10654X-00F	TWIST TIE NY66	
T8-21K9AK-FC10	T8-21K9AK-FC10Z	ASS'Y - FRONT CABINET(ART)ASY	
T8-21K9AK-FC10Z	56-21K9LE-0HC	TV RAW LENS IR -- 00 00 00 R=N	
T8-21K9AK-FC10Z	56-21K9PK-0HA	TV RAW KEY 21K9S/NX56 -- 00 00 00 R=N	
T8-21K9AK-FC10Z	56-21K9FB-0HA	TV RAW KEY 21K9S/NX56 -- 02 00 00 R=N	
T8-21K9AK-FC10Z	55-21K9FC-2CL	RAW FRONTPANEL 21K9A WITHOUT LOGO HOLE	
T8-21K9AK-FC10	62-461120-0UN	TV RAW GUIDE 21K8 黑色 00 00 00 R=Y	
T8-21K9AK-FC10	62-461640-0UN	RAW SUPPORT CRT -- 01 00 00 R=Y	FOR CHASSIS BRACKET
T8-21K9AK-FC10	63-B40150-AB4G	SCREW-ST 4MM 15MM ISO 62 R=Y	FOR SUPPORT
T8-21K9AK-FC10	59-130460-00X	RUBBER PAD (25MMX7MM)	FOR FRONT CABINT
T8-21K9AK-FC10	54-205140-000	SPACER CRT MOUNTING T=2MM	FOR CRT & SUPPORT
T8-21K9AK-FC10	54-113970-0U0	TV RAW INSULATOR SLEEVE AWG#5 -- 00 00 R	FOR SPK WIRE
T8-21K9AK-FC10	36-DEG210-AX0L	DEGAUSSING COIL ALXC-54	
T8-21K9AK-FC10	42-45108H-XX0G	SPEAKER 8OHM 15W 260HZ RECTANGLE Y91101-	SP601
T8-21K9AK-FC10	42-45108H-XX0G	SPEAKER 8OHM 15W 260HZ RECTANGLE Y91101-	SP602
03-21K9NAK-IN12X	T8-21K9AK-RC10	ASS'Y - REAR CABINETASY	
T8-21K9AK-RC10	63-B40150-AB4G	SCREW-ST 4MM 15MM ISO 62 R=Y	MTG FBT
T8-21K9AK-RC10	T8-21K9AK-RC10Z	ASS'Y - REAR CABINET(ART)ASY	
T8-21K9AK-RC10Z	55-461670-0CL	RAW BACKCOVER 21K8US/NX56 -- 03 00 00 R	
T8-21K9AK-RC10Z	58-21K9MP-JKC9A	TV DEC OVERLAY -- WHITE 01 00 00 R=Y	
T8-21K9AK-RC10	63-B40150-AB4G	SCREW-ST 4MM 15MM ISO 62 R=Y	MTG R.CAB & F.CAB
T8-21K9AK-RC10	63-F30100-BT3G	SCREW-ST 3MM 10MM ISO 65 0 0 R=Y	MTG RCA JACK TO R.CAB
T8-21K9AK-RC10	54-114000-00X	TV RAW FELT PAPER 150MMX19MMX0.3MM BK 01	STICK ON R.CAB
03-21K9NAK-IN12X	T8-21K9AK-PA11	ASS'Y - PACKINGASY	

T8-21K9AK-PA11	T8-21K9AK-PA11Z	ASS'Y - PACKING(ART)ASY	
T8-21K9AK-PA11Z	76-461930-0AT	RAW CARTON BOX PAPER 00 00 00 R=Y	
T8-21K9AK-PA11Z	74-120120-80HAA	POLYBAG W/SUFFOCATION WARNING	
T8-21K9AK-PA11Z	74-022032-6WE	RAW BAG PE 220X320X0.06MM -- 00 00 R=N	
T8-21K9AK-PA11Z	72-21K9AP-E009A	TV IB INSTRUCTION BOOK TCL CHS R=Y	
T8-21K9AK-PA11	49-R03P80-BAT	BATTERY 1.5V	
T8-21K9AK-PA11	75-461900-EC0	RAW POLYFOAM 21K8US -- 01 00 R=Y	
T8-21K9AK-PA11	75-461910-EC0	RAW POLYFOAM 21K8US -- 01 00 R=Y	
T8-21K9AK-PA11	75-461920-EC0	RAW POLYFOAM 21K8US -- 01 00 R=Y	
03-21K9NAK-IN12X	T8-21K9AK-BS1	ASS'Y - BASEASYASY	
T8-21K9AK-BS1	54-461280-000	TV RAW RUBBER 21K9S旋转底座脚垫 -- 00 00	
T8-21K9AK-BS1	T8-21K9AK-BS1Z	ASS'Y - BASE OF ARTASYASY	
T8-21K9AK-BS1Z	62-460850-0CL	TV RAW STAND 21K9S/NX56 -- 01 00 00 R=N	
03-21K9NAK-IN12X	T8-21K9NAK-MA6SM	ASS'Y - CHASSIS BDKIT	
T8-21K9NAK-MA6SM	T8-21K9NAK-MA6HM	ASS'Y - MAIN BDKIT	
T8-21K9NAK-MA6HM	T8-21K9AK-MA1	ASS'Y - MAIN BDEQU	
T8-21K9AK-MA1	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	D454
T8-21K9AK-MA1	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	D404
T8-21K9AK-MA1	10-1N4007-EBX	D-PIN 1.1V 1 A 1000V / /W DO-41 1N4007	D301
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D316
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D601
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D602
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D210
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D204
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D205
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D206
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D207
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D315
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D406
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D313
T8-21K9AK-MA1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D252
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	D408
T8-21K9AK-MA1	10-79C33V-DBX	DIODE ZENER 33V 1/2W 5%	D101
T8-21K9AK-MA1	10-79C5V6-DBX	DIODE ZENER 5V6 1/2W 5%	D251
T8-21K9AK-MA1	10-79C8V2-DBX	D-ZENER BZX55C8V2 8.2V 500MI0W R=N	D407
T8-21K9AK-MA1	10-79C8V2-DBX	D-ZENER BZX55C8V2 8.2V 500MI0W R=N	D250
T8-21K9AK-MA1	10-GBY228-FPX	D-FSR GBY228 1500V 2.5A R=Y	D455
T8-21K9AK-MA1	11-DA8050-CBS	TR 25V 1.5 A NPN 1W 100MHZ TO-92C 3DA805	Q202
T8-21K9AK-MA1	11-DA8050-CBS	TR 25V 1.5 A NPN 1W 100MHZ TO-92C 3DA805	Q201
T8-21K9AK-MA1	11-DD5024-0CX	TR 600V 8 A NPN 35W 1.7MHZ TO-220F 3DD50	Q402A
T8-21K9AK-MA1	11-KTD863-0BX	TRANSISTOR KTD863	Q401
T8-21K9AK-MA1	11-RFS630-0CXB	N-CHANNEL MOSFET IRFS630B	Q451
T8-21K9AK-MA1	11-SC1815-YBX	TR 50VV 150MA A NPN 0.4W 80MHZ TO-92 2SC	Q601
T8-21K9AK-MA1	11-SC1815-YBX	TR 50VV 150MA A NPN 0.4W 80MHZ TO-92 2SC	Q210
T8-21K9AK-MA1	11-SC1815-YBX	TR 50VV 150MA A NPN 0.4W 80MHZ TO-92 2SC	Q602
T8-21K9AK-MA1	11-SC1815-YBX	TR 50VV 150MA A NPN 0.4W 80MHZ TO-92 2SC	Q301
T8-21K9AK-MA1	11-SC1815-YBX	TR 50VV 150MA A NPN 0.4W 80MHZ TO-92 2SC	Q904
T8-21K9AK-MA1	11-SC1815-YBX	TR 50VV 150MA A NPN 0.4W 80MHZ TO-92 2SC	Q903
T8-21K9AK-MA1	13-00M24C-16P	IC-EEPROM M24C16-WBN6 R=N	IC202(CP)
T8-21K9AK-MA1	13-TDA729-7SS	IC TDA7297SA	IC601
T8-21K9AK-MA1	13-LA7814-10P	IC LA78141	IC301
T8-21K9AK-MA1	18-CB0100-JNX	RES. C.F. 10 OHM 1/6W +/-5%	R217
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R241
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R245
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R272
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R247
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R215
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R274
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R101
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R250
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R256

T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R214
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R239
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R240
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R275
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R102
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R208
T8-21K9AK-MA1	18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	R246
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R603A
T8-21K9AK-MA1	18-CB0562-JNX	RES. C.F. 5.6K OHM 1/6W +/-5%	R252
T8-21K9AK-MA1	18-CB0562-JNX	RES. C.F. 5.6K OHM 1/6W +/-5%	R253
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R302
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R409
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R604A
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R228
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R614
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R242
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R415
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R303
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R927
T8-21K9AK-MA1	18-CB0682-JNX	RES. C.F. 6.8K OHM 1/6W +/-5%	R429
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R928
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R213
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R271
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R238
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R612
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R258
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R205
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R257
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R315
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R255
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R254
T8-21K9AK-MA1	18-CB0104-JNX	RES. C.F. 100K OHM 1/6W +/-5%	R417
T8-21K9AK-MA1	18-CB0122-JNX	RES. C.F. 1.2K OHM 1/6W +/-5%	R251
T8-21K9AK-MA1	18-CB0123-JNX	RES. C.F. 12K OHM 1/6W +/-5%	R216
T8-21K9AK-MA1	18-CB0152-JNX	RES. C.F. 1.5K OHM 1/6W +/-5%	R311
T8-21K9AK-MA1	18-CB0391-JNX	RES. C.F. 390 OHM 1/6W +/-5%	R606
T8-21K9AK-MA1	18-CB0391-JNX	RES. C.F. 390 OHM 1/6W +/-5%	R605
T8-21K9AK-MA1	18-CB0153-JNX	RES. C.F. 15K OHM 1/6W +/-5%	R201
T8-21K9AK-MA1	18-CB0183-JNX	RES. C.F. 18K OHM 1/6W +/-5%	R608
T8-21K9AK-MA1	18-CB0202-JNX	RES. C.F. 2K OHM 1/6W +/-5%	R407
T8-21K9AK-MA1	18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	R314
T8-21K9AK-MA1	18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	D314
T8-21K9AK-MA1	18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	R304
T8-21K9AK-MA1	18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	R301
T8-21K9AK-MA1	18-CB0223-JNX	RES. C.F. 22K OHM 1/6W +/-5%	R906
T8-21K9AK-MA1	18-CB0223-JNX	RES. C.F. 22K OHM 1/6W +/-5%	R903
T8-21K9AK-MA1	18-CB0223-JNX	RES. C.F. 22K OHM 1/6W +/-5%	R406
T8-21K9AK-MA1	18-CB0223-JNX	RES. C.F. 22K OHM 1/6W +/-5%	R249
T8-21K9AK-MA1	18-CB0223-JNX	RES. C.F. 22K OHM 1/6W +/-5%	R902
T8-21K9AK-MA1	18-CB0223-JNX	RES. C.F. 22K OHM 1/6W +/-5%	R905
T8-21K9AK-MA1	18-CB0272-JNX	RES. C.F. 2.7K OHM 1/6W +/-5%	R211
T8-21K9AK-MA1	18-CB0273-JNX	RES. C.F. 27K OHM 1/6W +/-5%	R607
T8-21K9AK-MA1	18-CB0274-JNX	TCL18-CB0274-JNX= RES. C.F. 270K OHM 1/6	R410
T8-21K9AK-MA1	18-CB0331-JNX	RES. C.F. 330 OHM 1/6W +/-5%	R260
T8-21K9AK-MA1	18-CB0332-JNX	RES. C.F. 3.3K OHM 1/6W +/-5%	R221
T8-21K9AK-MA1	18-CB0332-JNX	RES. C.F. 3.3K OHM 1/6W +/-5%	R222
T8-21K9AK-MA1	18-CB0333-JNX	RES. C.F. 33K OHM 1/6W +/-5%	R209
T8-21K9AK-MA1	18-CB0333-JNX	RES. C.F. 33K OHM 1/6W +/-5%	R210
T8-21K9AK-MA1	18-CB0391-JNX	RES. C.F. 390 OHM 1/6W +/-5%	R204
T8-21K9AK-MA1	18-CB0391-JNX	RES. C.F. 390 OHM 1/6W +/-5%	R259
T8-21K9AK-MA1	18-CB0393-JNX	RES. C.F. 39K OHM 1/6W +/-5%	R212

T8-21K9AK-MA1	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	R223
T8-21K9AK-MA1	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	R220
T8-21K9AK-MA1	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	R224
T8-21K9AK-MA1	18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	R202
T8-21K9AK-MA1	18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	R401
T8-21K9AK-MA1	18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	R922
T8-21K9AK-MA1	18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	R921
T8-21K9AK-MA1	18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	R613
T8-21K9AK-MA1	18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	R270
T8-21K9AK-MA1	18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	R219
T8-21K9AK-MA1	18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	R229
T8-21K9AK-MA1	18-CB0473-JNX	RES. C.F. 47K OHM 1/6W +/-5%	R206
T8-21K9AK-MA1	18-CB0562-JNX	RES. C.F. 5.6K OHM 1/6W +/-5%	R316
T8-21K9AK-MA1	18-CB0680-JNX	RES. C.F. 68 OHM 1/6W +/-5%	R203
T8-21K9AK-MA1	18-CB0681-JNX	RES. C.F. 680 OHM 1/6W +/-5%	R207
T8-21K9AK-MA1	18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	R904
T8-21K9AK-MA1	18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	R269
T8-21K9AK-MA1	18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	R901
T8-21K9AK-MA1	18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	R278
T8-21K9AK-MA1	18-CD0100-JNX	RES. C.F. 10 OHM 1/4W +/-5%	J410
T8-21K9AK-MA1	18-CD0121-JNX	RES. C.F. 120 OHM 1/4W +/-5%	R403
T8-21K9AK-MA1	18-CD0189-JNX	RES. C.F 1.8 OHM 1/4W +/-5%	R305
T8-21K9AK-MA1	18-CE0270-JNX	RES.C.C 1/2W 27 OHM +/-5%	R261A
T8-21K9AK-MA1	18-CE0270-JNX	RES.C.C 1/2W 27 OHM +/-5%	R261
T8-21K9AK-MA1	18-CE0470-JNX	RES. C.F. 47 OHM 1/2W +/-5%	R264
T8-21K9AK-MA1	18-CE0470-JNX	RES. C.F. 47 OHM 1/2W +/-5%	R263
T8-21K9AK-MA1	25-BCB101-M1X	CAP.ELE 5MM 100UF 16VV 5X11 85 /	C219
T8-21K9AK-MA1	25-BCB101-M1X	CAP.ELE 5MM 100UF 16VV 5X11 85 /	C243
T8-21K9AK-MA1	25-BCB101-M1X	CAP.ELE 5MM 100UF 16VV 5X11 85 /	C252
T8-21K9AK-MA1	25-HCB101-M1X	CAP.ELE 5MM 100UF 16.0V 6.3*7 85 \	C253
T8-21K9AK-MA1	25-BDB100-M1X	CAP.ELE 5MM 10UF 25VV 5*11 85 \	C605
T8-21K9AK-MA1	25-BDB470-M1X	CAP.ELE 5MM 47UF 25VV 5X11 85 /	C236
T8-21K9AK-MA1	25-BDB470-M1X	CAP.ELE 5MM 47UF 25VV 5X11 85 /	C402
T8-21K9AK-MA1	25-BDB470-M1X	CAP.ELE 5MM 47UF 25VV 5X11 85 /	C104
T8-21K9AK-MA1	25-BDB471-M1X	CAP. ELEC 470 UF 25V +/-20%	C305
T8-21K9AK-MA1	25-BDB471-M1X	CAP. ELEC 470 UF 25V +/-20%	C303
T8-21K9AK-MA1	25-BDB102-M1X	CAP.ELE 5MM 1000UF 25V 10*20 85 CD110	C601
T8-21K9AK-MA1	25-BEB101-M1X	CAP. ELEC 100 UF 35V +/-20%	C307
T8-21K9AK-MA1	25-BFB100-M1X	CAP. ELEC 10 UF 50V +/-20%	C237
T8-21K9AK-MA1	25-BFB100-M1X	CAP. ELEC 10 UF 50V +/-20%	C101
T8-21K9AK-MA1	25-BFB100-M1X	CAP. ELEC 10 UF 50V +/-20%	C230
T8-21K9AK-MA1	25-BFB100-M1X	CAP. ELEC 10 UF 50V +/-20%	C202
T8-21K9AK-MA1	25-BFB100-M1X	CAP. ELEC 10 UF 50V +/-20%	C203
T8-21K9AK-MA1	25-BFB100-M1X	CAP. ELEC 10 UF 50V +/-20%	C211
T8-21K9AK-MA1	25-BFB100-M1X	CAP. ELEC 10 UF 50V +/-20%	C221
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C245
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C249
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C226
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C216
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C106
T8-21K9AK-MA1	25-HFB109-M1X	CAP.ELE 5MM 1UF 50VV 4*7 85 \	C609
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C248
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C247
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C246
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C608
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C250
T8-21K9AK-MA1	25-BFB109-M1X	CAP. ELEC 1 UF 50V +/-20%	C251
T8-21K9AK-MA1	25-BFB220-M1X	CAP. ELEC 22 UF 50V +/-20%	C319
T8-21K9AK-MA1	25-BFB220-M1X	CAP. ELEC 22 UF 50V +/-20%	C317
T8-21K9AK-MA1	25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/-20%	C318
T8-21K9AK-MA1	25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/-20%	C618

T8-21K9AK-MA1	25-BFB479-M1X	CAP. ELEC 4.7 UF 50V +/-20%	C205
T8-21K9AK-MA1	25-BLB100-M1X	CAP. ELEC 10 UF 250V +/-20%	C413
T8-21K9AK-MA1	25-DFA479-M1XR	CAP.ELEC 4.7UF 50V +/-20%	C452
T8-21K9AK-MA1	25-PJA470-M1X	TCL25-PJA470-M1X= CAP.CELE 47UF/160V/+/-	C419
T8-21K9AK-MA1	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	C451
T8-21K9AK-MA1	26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	C412
T8-21K9AK-MA1	26-EBP102-KBS	CAP.CER 1NF 50V - +/-10% B%	C306
T8-21K9AK-MA1	26-EBP102-KBS	CAP.CER 1NF 50V - +/-10% B%	C212
T8-21K9AK-MA1	26-EBP102-KBS	CAP.CER 1NF 50V - +/-10% B%	C213
T8-21K9AK-MA1	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	C108
T8-21K9AK-MA1	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	C311
T8-21K9AK-MA1	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	C207
T8-21K9AK-MA1	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	C005
T8-21K9AK-MA1	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	C218
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C220
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C217
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C210
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C611
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C238
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C244
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C239
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C240
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C242
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C241
T8-21K9AK-MA1	26-EBP221-JCS	CAP. CER 220 PF 50V +/-5%	C002
T8-21K9AK-MA1	26-EBP221-JCS	CAP. CER 220 PF 50V +/-5%	C308
T8-21K9AK-MA1	26-EBP333-KBS	CAP.CER 33NF 50V +/-10%	C612
T8-21K9AK-MA1	26-EBP223-ZFS	CAP. CER 22NF 50V +80%/-20%	C206
T8-21K9AK-MA1	26-EBP333-KBS	CAP.CER 33NF 50V +/-10%	C613
T8-21K9AK-MA1	26-EBP470-JCS	CAP. CER 47 PF 50V +/-5%	C103
T8-21K9AK-MA1	26-EBP470-JCS	CAP. CER 47 PF 50V +/-5%	C102
T8-21K9AK-MA1	26-EBP102-KBS	CAP.CER 1NF 50V - +/-10% B%	C301
T8-21K9AK-MA1	27-MBC224-J0X	CAP. M.P.E 0.22UF 63V +/-5%	C310
T8-21K9AK-MA1	27-PBC473-J0X	CAP. P.E 0.047 UF 63V +/-5%	C602
T8-21K9AK-MA1	27-PBC473-J0X	CAP. P.E 0.047 UF 63V +/-5%	C603
T8-21K9AK-MA1	27-PBC103-J0X	CAP. P.E. 0.01UF 63V +/-5%	C401
T8-21K9AK-MA1	27-PBC104-J0X	CAP. P.E 0.1UF 63V +/-5%	C204
T8-21K9AK-MA1	27-PBC104-J0X	CAP. P.E 0.1UF 63V +/-5%	C214
T8-21K9AK-MA1	27-PBC154-J0X	CAP. P.E. 0.15 UF 63V +/-5%	C208
T8-21K9AK-MA1	27-PBC222-J0X	CAP. P.E 0.0022UF 63V +/-5%	C309
T8-21K9AK-MA1	27-PBC563-J0X	CAP. P.E 0.056 UF 63V +/-5%	C420
T8-21K9AK-MA1	27-PBC563-J0X	CAP. P.E 0.056 UF 63V +/-5%	C414
T8-21K9AK-MA1	27-PBC682-J0X	CAP. P.E 0.0068UF 63V +/-5%	C215
T8-21K9AK-MA1	34-A100K2-1IX	IND-F 10UH 50 265MA 1.4OHM 52MM AL0203-1	L201
T8-21K9AK-MA1	41-WJ0100-B00	WIREBARE,JUMPER10MM	L101
T8-21K9AK-MA1	41-WJ0100-B00	WIREBARE,JUMPER10MM	L202
T8-21K9AK-MA1	41-WJ0100-B00	WIREBARE,JUMPER10MM	L203
T8-21K9AK-MA1	34-A100K2-1IX	IND-F 10UH 50 265MA 1.4OHM 52MM AL0203-1	L204
T8-21K9AK-MA1	34-R100J2-0EX	COIL PL - 10 UH +/-5%	L205
T8-21K9AK-MA1	34-R100J2-0EX	COIL PL - 10 UH +/-5%	L206
T8-21K9AK-MA1	36-HDR020-XX0	TRANSFORMER HORIZ DRIVE BCT-1621	T402
T8-21K9AK-MA1	40-00NX56-MAQ1XG	TV PCB MA BD R=Y	
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J417
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	R418
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	R408A
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J420
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	R460
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J412
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J415
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J416
T8-21K9AK-MA1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JB902

T8-21K9AK-MA1	41-WJ0055-B00	WIREBAREJUMPER5.5MM	J232
T8-21K9AK-MA1	41-WJ0055-B00	WIREBAREJUMPER5.5MM	J425
T8-21K9AK-MA1	41-WJ0055-B00	WIREBAREJUMPER5.5MM	JZ903
T8-21K9AK-MA1	41-WJ0060-B00	WIRE-BARE	JB901
T8-21K9AK-MA1	41-WJ0060-B00	WIRE-BARE	J202
T8-21K9AK-MA1	41-WJ0060-B00	WIRE-BARE	J244
T8-21K9AK-MA1	41-WJ0060-B00	WIRE-BARE	J910
T8-21K9AK-MA1	41-WJ0065-B00	1 R=N	J249
T8-21K9AK-MA1	41-WJ0065-B00	1 R=N	J008
T8-21K9AK-MA1	41-WJ0065-B00	1 R=N	J233
T8-21K9AK-MA1	41-WJ0065-B00	1 R=N	J236
T8-21K9AK-MA1	41-WJ0065-B00	1 R=N	J306
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J231
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J245
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J301
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J411
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J227
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J605
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J409
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J610
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J303
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J902
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J307
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J235
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J907
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	D201
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J212
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	D202
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	D203
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J311
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	D220
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J426
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J229
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J208
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J107
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J102
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J222
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J223
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J243
T8-21K9AK-MA1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J242
T8-21K9AK-MA1	41-WJ0080-B00	WIREBAREJUMPER8MM	J007
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J915
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J214
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J602
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J310
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J305
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J309
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J228
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J913
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J914
T8-21K9AK-MA1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J904
T8-21K9AK-MA1	41-WJ0090-B00	WIREBAREJUMPER9MM	J234
T8-21K9AK-MA1	41-WJ0090-B00	WIREBAREJUMPER9MM	J221
T8-21K9AK-MA1	41-WJ0095-B00	WIREBAREJUMPER9.5MM	J403
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J230
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	R004
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J201
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J237
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J205
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J110
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J911

T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J004
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J109
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J206
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J238
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J226
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J101
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J606
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J002
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J248
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J247
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J001
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J246
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	JP201
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J225
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J220
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J607
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J108
T8-21K9AK-MA1	41-WJ0100-B00	WIREBAREJUMPER10MM	J207
T8-21K9AK-MA1	41-WJ0105-B00	WIREBAREJUMPER10.5MM	J413
T8-21K9AK-MA1	41-WJ0110-B00	WIREBAREJUMPER11MM	J908
T8-21K9AK-MA1	41-WJ0115-B00	WIREBAREJUMPER11.5MM	J219
T8-21K9AK-MA1	41-WJ0115-B00	WIREBAREJUMPER11.5MM	J218
T8-21K9AK-MA1	41-WJ0115-B00	WIREBAREJUMPER11.5MM	J217
T8-21K9AK-MA1	41-WJ0115-B00	WIREBAREJUMPER11.5MM	J216
T8-21K9AK-MA1	41-WJ0115-B00	WIREBAREJUMPER11.5MM	R262
T8-21K9AK-MA1	41-WJ0115-B00	WIREBAREJUMPER11.5MM	J916
T8-21K9AK-MA1	41-WJ0120-B00	WIREBAREJUMPER12MM	J917
T8-21K9AK-MA1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J240
T8-21K9AK-MA1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J241
T8-21K9AK-MA1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J304
T8-21K9AK-MA1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J210
T8-21K9AK-MA1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J204
T8-21K9AK-MA1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J404
T8-21K9AK-MA1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J906
T8-21K9AK-MA1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J203
T8-21K9AK-MA1	41-WJ0150-B00	WIREBAREJUMPER15MM	J250
T8-21K9AK-MA1	41-WJ0150-B00	WIREBAREJUMPER15MM	J006
T8-21K9AK-MA1	41-WJ0150-B00	WIREBAREJUMPER15MM	J211
T8-21K9AK-MA1	41-WJ0150-B00	WIREBAREJUMPER15MM	J224
T8-21K9AK-MA1	41-WJ0150-B00	WIREBAREJUMPER15MM	J918
T8-21K9AK-MA1	41-WJ0170-B00	WIREBAREJUMPER17MM	J905
T8-21K9AK-MA1	41-WJ0175-B00	WIREBAREJUMPER17.5MM	J402
T8-21K9AK-MA1	41-WJ0175-B00	WIREBAREJUMPER17.5MM	J406
T8-21K9AK-MA1	41-WJ0175-B00	WIREBAREJUMPER17.5MM	J408
T8-21K9AK-MA1	41-WJ0185-B00	WIREBAREJUMPER18.5MM	J213
T8-21K9AK-MA1	41-WJ0200-B00	WIREBAREJUMPER20MM	J405
T8-21K9AK-MA1	45-OSC24M-5N6BR	CRYSTAL 24.576MHZ 30PPM R=Y	X201
T8-21K9AK-MA1	46-33079W-02XG	PIN BASE *2 TJC3-2A	P602
T8-21K9AK-MA1	46-33079W-03XG	PIN BASE *3 TJC3-3A	P603
T8-21K9AK-MA1	46-33079W-04XG	PIN BASE *4 TJC3-4A	P203
T8-21K9AK-MA1	46-39402W-04XG	BASE	P401
T8-21K9AK-MA1	62-227680-0UA	TV RAW SUPPORT CABLE CHASSIS -- 00 00 00	
T8-21K9AK-MA1	62-227680-1UA	TV RAW SUPPORT CABLE FBT -- 01 00 00 R=N	
T8-21K9AK-MA1	63-B30080-BT4G	S/T SCREW B 3 X 8 BT	FOR Q402A
T8-21K9AK-MA1	63-B30100-AB4G	SCREW-ST 3MM 10MM JIS B 1122 53 0 0 R=Y	FOR IC301
T8-21K9AK-MA1	64-P30080-104G	M/C SCREW P 3 X 8	FOR Q451
T8-21K9AK-MA1	64-P30080-104G	M/C SCREW P 3 X 8	FOR IC601
T8-21K9AK-MA1	66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	FOR T401
T8-21K9AK-MA1	66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	FOR L458
T8-21K9AK-MA1	66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	FOR L451
T8-21K9AK-MA1	66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	FOR Q402A

T8-21K9AK-MA1	66-343740-0B0	HOLLOW RIVET (2.3MMX4.0MMX3.5MM)	FOR P401
T8-21K9AK-MA1	67-H27292-2A0	HEAT SINK	Y451
T8-21K9AK-MA1	67-H30752-GA0	RAW HEATSINK -- GA0 00 R=N	Y402
T8-21K9AK-MA1	67-M40068-2E4	TV RAW SUPPORT -- -- 00 00 00 R=N	Y301
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R243
T8-21K9AK-MA1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R244
T8-21K9AK-MA1	18-CB0100-JNX	RES. C.F. 10 OHM 1/6W +/-5%	R103
T8-21K9AK-MA1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R105
T8-21K9AK-MA1	18-CB0121-JNX	RES. C.F. 120 OHM 1/6W +/-5%	R106
T8-21K9AK-MA1	18-CB0220-JNX	RES. C.F. 22 OHM 1/6W +/-5%	R109
T8-21K9AK-MA1	18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	R108
T8-21K9AK-MA1	18-CB0560-JNX	RES. C.F. 56 OHM 1/6W +/-5%	R104
T8-21K9AK-MA1	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	C110
T8-21K9AK-MA1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C109
T8-21K9AK-MA1	34-A109K0-1HX	COIL CHOKE 1 UH +/-10% LGA0305-1R0K	L102
T8-21K9AK-MA1	11-SC388A-MBX	TRANSISTOR 2SC388ATM (RF AMPL)	Q101
T8-21K9NAK-MA6HM	T8-21K9AK-PW1	ASS'Y - POWER PARTSKIT	
T8-21K9AK-PW1	10-00RU3C-FPX	D-PIN 2.5V 1.5 A 1000V 0.0001 0W DO-15 R	D808
T8-21K9AK-PW1	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	D813
T8-21K9AK-PW1	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	D804
T8-21K9AK-PW1	10-0FR107-FBX	D-PIN 1.3V 1 A 1000VV 500NS /W DO-15 FR1	D809
T8-21K9AK-PW1	10-0RL255-EBX	D-PIN 1.1V 2 A 800V / /W DO-15 RL255	DB804
T8-21K9AK-PW1	10-0RL255-EBX	D-PIN 1.1V 2 A 800V / /W DO-15 RL255	DB803
T8-21K9AK-PW1	10-0RL255-EBX	D-PIN 1.1V 2 A 800V / /W DO-15 RL255	DB802
T8-21K9AK-PW1	10-0RL255-EBX	D-PIN 1.1V 2 A 800V / /W DO-15 RL255	DB801
T8-21K9AK-PW1	10-0RU4YX-FPX	D-FSR GRU4YX 100V 4A R=Y	D812
T8-21K9AK-PW1	10-1N4001-EBX	DIODE 1N4001 (RECTIFIER)	D815
T8-21K9AK-PW1	41-WJ0120-B00	WIREBAREJUMPER12MM	D816
T8-21K9AK-PW1	10-1N4007-EBX	D-PIN 1.1V 1 A 1000V / /W DO-41 1N4007	D802
T8-21K9AK-PW1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D811
T8-21K9AK-PW1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D814
T8-21K9AK-PW1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D810
T8-21K9AK-PW1	10-79C3V9-DBX	D-PR /A / V 3.9V BZX79C3V9	ZD803
T8-21K9AK-PW1	10-79C3V9-DBX	D-PR /A / V 3.9V BZX79C3V9	ZD802
T8-21K9AK-PW1	10-79C4V7-DBX	D-PR /A / V 4.7V BZX79C4V7	ZD804
T8-21K9AK-PW1	10-79C8V2-DBX	D-ZENER BZX55C8V2 8.2V 500MI0W R=N	ZD805
T8-21K9AK-PW1	10-HER108-FBX	DIODE HER108	D803
T8-21K9AK-PW1	11-2N5551-CBX	TR 160V 0.6 A NPN 0.625W 100MHZ TO-92 2N	Q802
T8-21K9AK-PW1	11-DA8050-CBS	TR 25V 1.5 A NPN 1W 100MHZ TO-92C 3DA805	Q804
T8-21K9AK-PW1	11-S7N60F-0CX	MOSFET N 600V 7A 48W TO-220F JCS7N60F	Q801
T8-21K9AK-PW1	11-TC144E-0BX	TRANSISTOR DTC144ESA	Q808
T8-21K9AK-PW1	13-NCP133-7PP	OPTICOUP NCP1337P	IC801
T8-21K9AK-PW1	13-PC123X-9YP	TCL13-PC123X-9YP= PHOTOCOUPLER PC123X9YF	IC803
T8-21K9AK-PW1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R808
T8-21K9AK-PW1	18-CB0122-JNX	RES. C.F. 1.2K OHM 1/6W +/-5%	R805
T8-21K9AK-PW1	18-CB0153-JNX	RES. C.F. 15K OHM 1/6W +/-5%	R810
T8-21K9AK-PW1	18-CB0183-JNX	RES. C.F. 18K OHM 1/6W +/-5%	R831
T8-21K9AK-PW1	18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	R820
T8-21K9AK-PW1	18-CB0331-JNX	RES. C.F. 330 OHM 1/6W +/-5%	R819
T8-21K9AK-PW1	18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	R811
T8-21K9AK-PW1	18-CB0821-JNX	RES. C.F. 820 OHM 1/6W +/-5%	R818
T8-21K9AK-PW1	18-CD0391-JNX	RES. C.F. 390 OHM 1/4W +/-5%	R816
T8-21K9AK-PW1	18-CD0470-JNX	RES. C.F. 47 OHM 1/4W +/-5%	R809
T8-21K9AK-PW1	18-CE0105-JNX	RES. C.F. 1M OHM 1/2W +/-5%	R839
T8-21K9AK-PW1	18-CE0120-JNX	RES.C.C 1/2W 12 OHM +/-5%	R848
T8-21K9AK-PW1	18-CE0120-JNX	RES.C.C 1/2W 12 OHM +/-5%	R846
T8-21K9AK-PW1	18-CE0332-JNX	RES. C.F. 3.3K OHM 1/2W +/-5%	R841
T8-21K9AK-PW1	18-CE0560-JNX	TCL18-CE0560-JNX= RES. C.F. 56 OHM 1/2W	R817
T8-21K9AK-PW1	18-DB0223-FNX	TCL18-DB0223-FNX= RES. M.F. 22K OHM 1/6W	R803
T8-21K9AK-PW1	18-DB0273-FNX	RES. M.F. 27K OHM 1/6W +/-1%	R832
T8-21K9AK-PW1	18-DD0184-FNX	RES. M.F. 180K OHM 1/4W +/-1%	R829

T8-21K9AK-PW1	18-FE0100-JNX	RESISTOR METAL OXIDE FILM 10R00HM 5% 1/2	R842
T8-21K9AK-PW1	18-CB0100-JNX	RES. C.F. 10 OHM 1/6W +/-5%	R849
T8-21K9AK-PW1	18-FE0102-JNX	RESISTOR METAL OXIDE FILM 1K00HM 5% 1/2W	R804
T8-21K9AK-PW1	18-FG0183-JSX	RMOF 18KOHM +/-5% 2W R=Y	R814
T8-21K9AK-PW1	18-FG0223-JSX	RMOF 2W +-5%22KΩ	R837
T8-21K9AK-PW1	18-FH0473-JLX	RESISTOR METAL OXIDE FILM 47K00HM 5% 3WW	R812
T8-21K9AK-PW1	18-KE0475-JNX	RES. GLASS GLAZE 4.7M OHM 1/2W +/-5%	R801
T8-21K9AK-PW1	18-KF0825-JH3	RES. H.VOLT.CC 8.2M OHM 1W +/-5%	R838
T8-21K9AK-PW1	18-RG0108-JHX	RES. WIRE ROUND 0.1 OHM 2W +/-5%	R806
T8-21K9AK-PW1	22-NTC479-XX0	NTC 4.7D2-14	RT802
T8-21K9AK-PW1	22-PTC909-3A5	PTC MZ73BHL-9Ω±20%	RT801
T8-21K9AK-PW1	25-BCB101-M1X	CAP.ELE 5MM 100UF 16VV 5X11 85 /	C842
T8-21K9AK-PW1	25-BCB101-M1X	CAP.ELE 5MM 100UF 16VV 5X11 85 /	C844
T8-21K9AK-PW1	25-BDA222-M1S	CAP.ELE 5MM 2200UF 25VV 12.5X25 85 /	C832
T8-21K9AK-PW1	25-BDB101-M1X	CAP. ELEC 100 UF 25V +/-20%	C847
T8-21K9AK-PW1	25-BDB470-M1X	CAP.ELE 5MM 47UF 25VV 5X11 85 /	C835
T8-21K9AK-PW1	25-BDB470-M1X	CAP.ELE 5MM 47UF 25VV 5X11 85 /	C826
T8-21K9AK-PW1	25-BDB470-M1X	CAP.ELE 5MM 47UF 25VV 5X11 85 /	C843A
T8-21K9AK-PW1	25-BDB470-M1X	CAP.ELE 5MM 47UF 25VV 5X11 85 /	C812
T8-21K9AK-PW1	25-BHB470-M1X	CAP.ELE 5MM 47UF 100V 10*16 85 B41827系	C846
T8-21K9AK-PW1	25-BJG101-M1X	CAP. ELEC 100 UF 160V +/-20%	C824
T8-21K9AK-PW1	25-GCB102-M1X	CAP.ELE 5MM 1000UF 16V 10*20 105 ZT	C833
T8-21K9AK-PW1	26-AIC221-KBX	CAP.CER 220P0F 500VV -	C822
T8-21K9AK-PW1	26-AKC152-KRX	CAP. CER 1500 pF 1KV +/-10%	C811A
T8-21K9AK-PW1	26-AKC331-KBX	CAP.CER 330P0F 1K0V -	C817
T8-21K9AK-PW1	26-AKC471-KRX	CAP.CER 470P0F 1KVV -	C805
T8-21K9AK-PW1	26-AKC472-MEX	CAP. CER 4700 pF 1KV +/-20%	C810A
T8-21K9AK-PW1	26-AKL103-MFX	CAP. CER 10 NF 1KVDC +/-20%	C809
T8-21K9AK-PW1	26-APL222-ME7	CAP.CER 2200PF 250V CT7-Y1-250V-10C-E-22	CY803
T8-21K9AK-PW1	26-EBP102-KBS	CAP.CER 1NF 50V - +/-10% B%	C814
T8-21K9AK-PW1	26-EBP102-KBS	CAP.CER 1NF 50V - +/-10% B%	C838
T8-21K9AK-PW1	26-EBP102-KBS	CAP.CER 1NF 50V - +/-10% B%	C816
T8-21K9AK-PW1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C839
T8-21K9AK-PW1	26-EBP103-ZFS	CAP.CER 10NF 50V +80% -20%	C851
T8-21K9AK-PW1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C813
T8-21K9AK-PW1	26-EBP473-ZFS	TCL26-EBP473-ZFS= CAP. CER 47NF 50V +80/	C806
T8-21K9AK-PW1	26-EBP561-JCS	CAP. CEP 560PF 50V +/-5%	C807
T8-21K9AK-PW1	26-EBP681-JCS	CAP. CER 680 PF 50V +/-5%	C815
T8-21K9AK-PW1	27-AQT224-MV3	FILM CAPACITOR 220N0F 22.5MMMM 250VACV -	CX802
T8-21K9AK-PW1	35-392170-0IX	FERR BEAD BF-I35050R-730	L802
T8-21K9AK-PW1	36-LIF010-XX0	LINE FILTER LCL-2821A	LF802
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J836
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J835
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J834
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	R845
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J828
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J813
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J833
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J829
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	L804
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J821
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J831
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J823
T8-21K9AK-PW1	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	J830
T8-21K9AK-PW1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J850
T8-21K9AK-PW1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J814
T8-21K9AK-PW1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J849
T8-21K9AK-PW1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J848
T8-21K9AK-PW1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J847
T8-21K9AK-PW1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	J846
T8-21K9AK-PW1	41-WJ0075-B00	WIREBAREJUMPER7.5MM	R830

T8-21K9AK-PW1	41-WJ0095-B00	WIREBAREJUMPER9.5MM	J809
T8-21K9AK-PW1	41-WJ0100-B00	WIREBAREJUMPER10MM	JP805
T8-21K9AK-PW1	41-WJ0100-B00	WIREBAREJUMPER10MM	JP810
T8-21K9AK-PW1	41-WJ0100-B00	WIREBAREJUMPER10MM	J802
T8-21K9AK-PW1	41-WJ0100-B00	WIREBAREJUMPER10MM	J801
T8-21K9AK-PW1	41-WJ0100-B00	WIREBAREJUMPER10MM	JP807
T8-21K9AK-PW1	41-WJ0125-B00	WIREBAREJUMPER12.5MM	J820
T8-21K9AK-PW1	46-10962W-02XG	PIN BASE *2 TJC2-2A	CN802
T8-21K9AK-PW1	50-05000D-1GSG	FUSE 5A 250VAC 5MMX20MM	F801
T8-21K9AK-PW1	64-P30080-104G	M/C SCREW P 3 X 8	FOR Q801
T8-21K9AK-PW1	66-20517X-0B7	FUSE HOLDER	FOR F801
T8-21K9AK-PW1	66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	FOR C824
T8-21K9AK-PW1	66-343730-0B0	HOLLOW RIVET 1.6MMX3.0MMX3.2MM	FOR T801
T8-21K9AK-PW1	66-343740-0B0	HOLLOW RIVET (2.3MMX4.0MMX3.5MM)	FOR C803
T8-21K9AK-PW1	67-H38013-2A0	RAW HEATSINK -- 02 00 R=Y	Y801
T8-21K9AK-PW1	71-DYP000-WX1	LABEL	FOR Y801
T8-21K9AK-PW1	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	D819
T8-21K9AK-PW1	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	D818
T8-21K9AK-PW1	26-AIC221-KBX	CAP.CER 220P0F 500VV -	C819
T8-21K9AK-PW1	26-AIC221-KBX	CAP.CER 220P0F 500VV -	C820
T8-21K9AK-PW1	25-BDB102-M1X	CAP.ELE 5MM 1000UF 25V 10*20 85 CD110	C827
T8-21K9AK-PW1	25-BDB102-M1X	CAP.ELE 5MM 1000UF 25V 10*20 85 CD110	C829
T8-21K9AK-PW1	13-AZ431A-ZAT	IC AZ431AZ-ATRE1	IC802
T8-21K9AK-PW1	10-0RU4YX-FPX	D-FSR GRU4YX 100V 4A R=Y	D817
T8-21K9NAK-MA6HM	T8-21K9AK-SB1	ASS'Y - STENBAY PARTSKIT	
T8-21K9AK-SB1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D876
T8-21K9AK-SB1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D875
T8-21K9AK-SB1	11-SC1815-YBX	TR 50VV 150MA A NPN 0.4W 80MHZ TO-92 2SC	Q873
T8-21K9AK-SB1	18-CB0472-JNX	CARBON RES. C.F. 4.7K OHM 1/6W +/-5%	R876
T8-21K9AK-SB1	18-CB0273-JNX	RES. C.F. 27K OHM 1/6W +/-5%	R877
T8-21K9AK-SB1	25-BCB471-M1X	CAP. ELEC 470 UF 16V +/-20%	C877
T8-21K9AK-SB1	26-EBP104-ZFS	CAP. CER 0.1UF 50V +80%/-20%	C878
T8-21K9AK-SB1	43-TSS112-DMX	RELAY POWER SMIT-SS-112DM 12V	RL871
T8-21K9AK-SB1	41-WJ0085-B00	WIREBAREJUMPER8.5MM	J003
T8-21K9AK-SB1	10-1N4148-ABX	DIODE 1N4148 (SWITCHING)	D801
T8-21K9AK-SB1	10-0FR104-FBX	DIODE FR104 (FAST RECTIFIER)	D805
T8-21K9AK-SB1	10-79C15V-DBX	D-PR /A / V 15V BZX79C15	ZD806
T8-21K9AK-SB1	18-CD0821-JNX	RES. C.F. 820 OHM 1/4W +/-5%	R802
T8-21K9AK-SB1	25-BFB470-M1X	CAP. ELEC 47 UF 50V +/-20%	C818
T8-21K9NAK-MA6HM	T8-NX56LA-AV2	ASS'Y - AV PARTSKIT	
T8-NX56LA-AV2	47-RCA254-XX0G	SOCKET-RCA 1 RD-BU-GN-RD-WH-YW R	P901
T8-NX56LA-AV2	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JC901
T8-NX56LA-AV2	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JC902
T8-NX56LA-AV2	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JC904
T8-NX56LA-AV2	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JC905
T8-NX56LA-AV2	41-WJ0075-B00	WIREBAREJUMPER7.5MM	JC903
T8-NX56LA-AV2	41-WJ0075-B00	WIREBAREJUMPER7.5MM	JC906
T8-21K9NAK-MA6HM	T8-21F1AK-KE1	ASS'Y - KEY BDKIT	
T8-21F1AK-KE1	48-TAC001-XX0	TACT SWITCH	K006
T8-21F1AK-KE1	48-TAC001-XX0	TACT SWITCH	K005
T8-21F1AK-KE1	48-TAC001-XX0	TACT SWITCH	K004
T8-21F1AK-KE1	48-TAC001-XX0	TACT SWITCH	K003
T8-21F1AK-KE1	48-TAC001-XX0	TACT SWITCH	K002
T8-21F1AK-KE1	48-TAC001-XX0	TACT SWITCH	K001
T8-21F1AK-KE1	62-226920-0HA	TV RAW HOLDER LED -- 01 00 R=N	FOR LED1
T8-21F1AK-KE1	02-IRR001-XX1T	IR RECEIVER 37.9KHZ 5V N HM338A	IR01
T8-21F1AK-KE1	11-SC1815-YBX	TR 50VV 150MA A NPN 0.4W 80MHZ TO-92 2SC	Q001
T8-21F1AK-KE1	14-LED05R-XX1	LED RED FB205	D001
T8-21F1AK-KE1	18-CB0100-JNX	RES. C.F. 10 OHM 1/6W +/-5%	R001
T8-21F1AK-KE1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R002
T8-21F1AK-KE1	18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	R003

T8-21F1AK-KE1	18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	R009
T8-21F1AK-KE1	18-CB0561-JNX	RES. C.F. 560 OHM 1/6W +/-5%	R010
T8-21F1AK-KE1	18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	R011
T8-21F1AK-KE1	18-CB0271-JNX	RES. C.F. 270 OHM 1/6W +/-5%	R007
T8-21F1AK-KE1	18-CB0331-JNX	RES. C.F. 330 OHM 1/6W +/-5%	R008
T8-21F1AK-KE1	25-BDB470-M1X	CAP.ELE 5MM 47UF 25VV 5X11 85 /	C001
T8-21K9NAK-MA6HM	T8-21K9NAK-OT6	ASS'Y - OTHER PARTSKIT	
T8-21K9NAK-OT6	45-SAWD29-09C0D	FILTER-SAW PAL 38.9MHZ SINGLE D2909C	Z201
T8-21K9NAK-OT6	13-TDA121-56P	IC CRT TV SIGNAL PROCESSOR+MCU NXP DIP	IC201(CP)
T8-21K9NAK-OT6	70-271510-00A	SERVICE CARD	FOR PRODUCTION USE
T8-21K9NAK-OT6	71-270870-0A9	LABEL	
T8-21K9NAK-OT6	90-0DSTG1-SR1U	HEAT SINK DSTG-1	
T8-21K9NAK-OT6	46-CD035T-06K02G	WIRE CONNECT 350MM 6 TJC3 SCN 2.5MM UL24	P201
T8-21K9NAK-OT6	07-389FI5-NF3T	TUNER A% 散装 PAL 38.9MHZ IEC TDQ-3HA2	TU101
T8-21K9NAK-OT6	46-35063W-03XG	PIN BASE *3 VH-3A	CN801
T8-21K9NAK-OT6	66-343740-0B0	HOLLOW RIVET (2.3MMX4.0MMX3.5MM)	FOR CN801
T8-21K9NAK-OT6	25-GNJ221-M1X	CAP.ELE 10MM 220UF 450VV 30X30 105 /	C803
T8-21K9NAK-OT6	67-H45987-2A0	RAW HEATSINK -- 02 00 R=Y	Y1
T8-21K9NAK-OT6	67-H45987-2A0	RAW HEATSINK -- 02 00 R=Y	Y2
T8-21K9NAK-OT6	46-CD030T-04K01G	WIRE 四芯灯丝排线 300MM 4 TJC3 SCN 2.5MM	S402 TO CRT BD P502
T8-21K9NAK-OT6	48-POW001-YX0G	SWITH-POWER 250V 8A	K801
T8-21K9NAK-OT6	41-WJ0075-B00	WIREBAREJUMPER7.5MM	JP804
T8-21K9NAK-OT6	41-WJ0075-B00	WIREBAREJUMPER7.5MM	JP803
T8-21K9NAK-OT6	41-WJ0050-B00	TCL41-WJ0050-B00= WIRE BARE JUMPER 5MM R	JP101
T8-21K9NAK-OT6	51-DC0180-0KN0HG	POWER CORD 1800MM 16A 250V Y DTIII-2P-04	
T8-21K9NAK-OT6	67-H46200-0A0	RAW HEATSINK -- F 00 R=Y	Y601
T8-21K9NAK-OT6	47-SVI002-XX0	Y/C SOCKET VERTICAL TYPE	P903
T8-21K9NAK-OT6	22-VDR561-XG2	VARISTOR RESISTANCE 14D561K-M	Z801